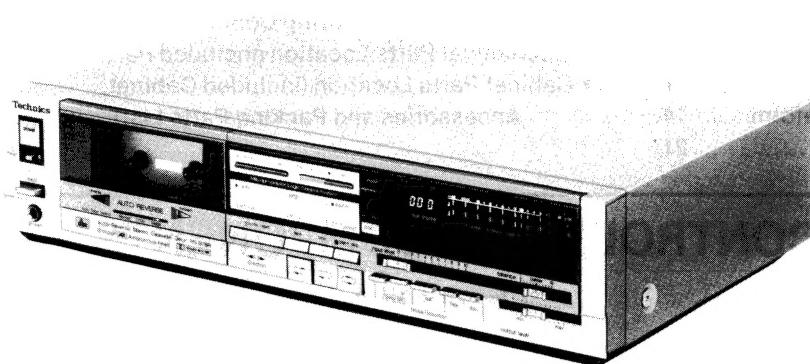
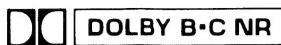


Service Manual

Cassette Deck

**dbx/Dolby B-C NR, Auto-Reverse
Cassette Deck**

RS-B78R
(Silver Face)
(Black Face)



RS-8R MECHANISM SERIES

Specifications

Track system:	4-track 2-channel stereo recording and playback
Tape speed:	4.8cm/s
Wow and flutter:	0.045% (WRMS), ±0.14% (DIN)
Frequency response:	Metal tape; 20~20,000Hz 30~19,000Hz (DIN) 40~18,000Hz ±3dB CrO ₂ tape; 20~19,000Hz 30~18,000Hz (DIN) 40~17,000Hz ±3dB Normal tape; 20~18,000Hz 30~17,000Hz (DIN) 40~16,000Hz ±3dB
Dynamic range:	110dB (at 1kHz) with dbx in
Max. input level improvement:	10dB or more improved with dbx in (at 1kHz)
Signal-to-noise ratio:	dbx in; 92dB (A weighted) Dolby C NR in; 75dB (CCIR) Dolby B NR in; 68dB (CCIR) NR out; 58dB (A weighted) (Signal level = max. input level CrO ₂ type tape)

Fast forward and rewind time:	Approx. 90 seconds with C-60 cassette tape
Inputs:	MIC; sensitivity 0.25mV, applicable microphone impedance 400Ω~10kΩ LINE; sensitivity 60mV, input impedance 47kΩ or more
Outputs:	LINE; output level 700mV, output impedance 800Ω or less HEADPHONES; output level 125mV (at 8Ω) applicable headphone impedance 8Ω~600Ω
Bias frequency:	80kHz
Heads:	1-AX (AMORPHOUS) head for rec/playback 2-double-gap ferrite head for erasure
Motor:	3-motor system One for capstan drive (Electrical governor motor) One for reeltable drive (DC motor) One for mechanism drive (DC motor)

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

Power

requirements: AC; 110/125/220/240V, 50-60Hz

□...Pre-set power voltage 220V

■■■■■...Pre-set power voltage 240V

Power

consumption: 25W

Dimensions: 43cm(W)×9.8cm(H)×27.3cm(D)

Weight: 5.3kg

Design and specifications are subject to change without notice.

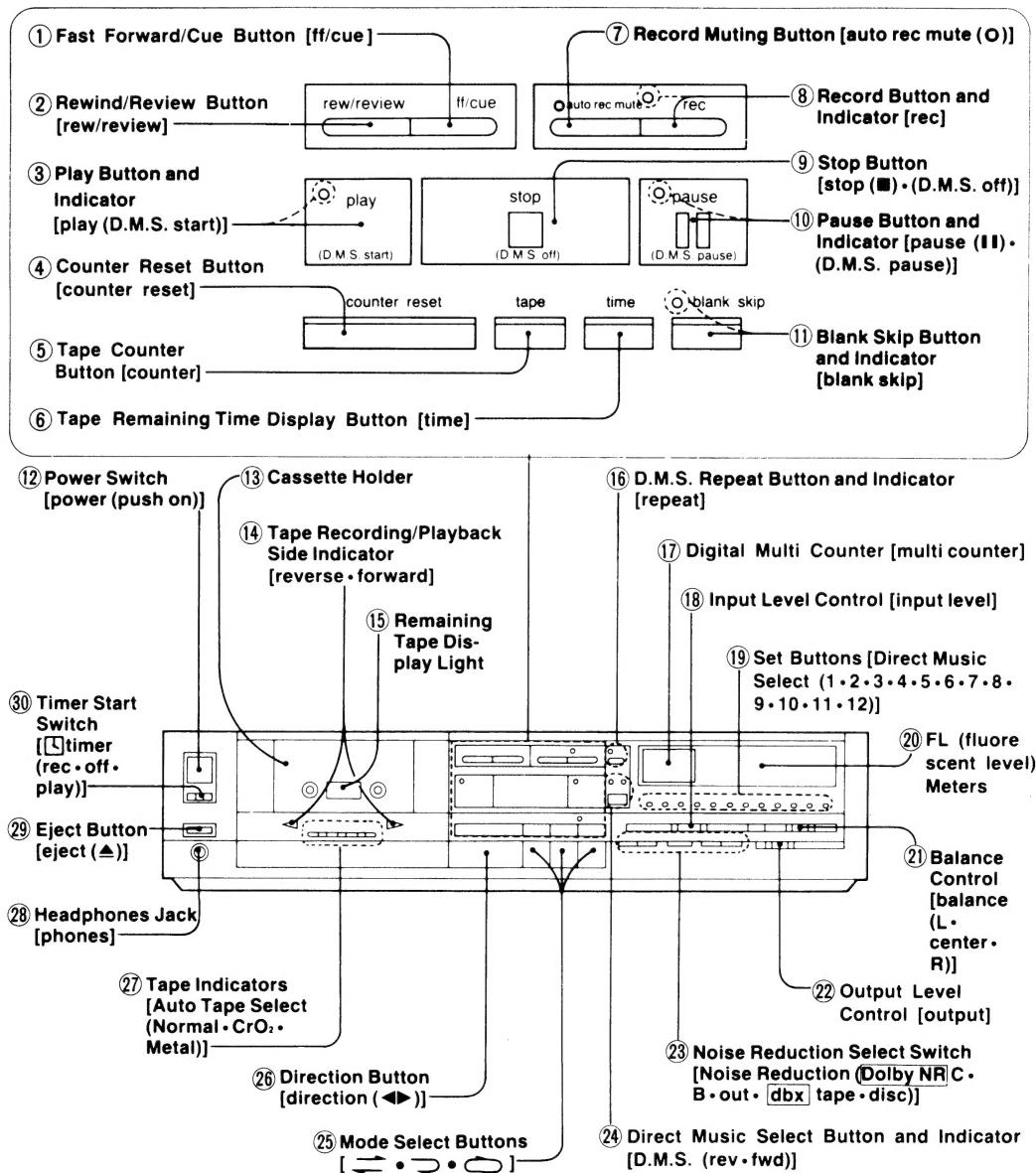
* The term dbx is a registered trademark of dbx Inc.

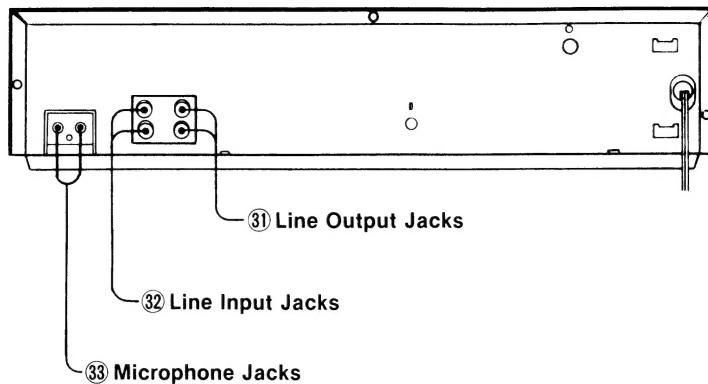
** 'Dolby' and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

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LOCATION OF CONTROLS AND COMPONENTS





OPERATING INSTRUCTION

About direct music select function

After searching for the beginning of your desired programs, the unit will begin playback automatically.

1. Select the playback side

Each time the Direct Music Select Button is pressed, the unit will switch between forward and reverse playback. (The Forward or Reverse Indicator will light in the respective modes).

2. Select the programs

Press the Set Buttons of the programs you wish to hear (the buttons pressed will light).

- Programs are always counted from the beginning of the tape, first program, second program...etc.
- If the first program is set, the tape will automatically rewind to the beginning and enter the stop mode.
- If a button is pressed by mistake, pressing it once more will release it (its light goes out).

To listen to the 5th, 9th, and 2nd programs from the tape's beginning:

Press Set Button 5, 9, and 2 in that order.

To listen to set programs repeatedly:

If the D.M.S. Repeat Button is pressed, the set programs will be played back repeatedly (the D.M.S. Repeat Indicator will light, indicating that the D.M.S. repeat function is operating).

3. Begin playback

When the Play Button is pressed, the set programs will begin playback. (Programs not set will be skipped over automatically by the fast forward and rewind functions).

To cancel direct music select:

Press the Stop Button.

To cancel D.M.S. repeat:

Press the D.M.S. Repeat Button once again (the D.M.S. Repeat Indicator goes out).

Notes:

- During D.M.S. repeat playback, the unit will playback repeatedly a maximum of 16 times unless the Stop Button is pressed earlier.
- Playback in the direct music select mode is in the order in which the Set Buttons are pressed.
- Use the cassette tape's index card to note the names and order of programs recorded; this makes use of the Set Buttons more convenient.
- This may not operate correctly with the following kinds of tape: programs with passages of extremely low volume level, music tapes with non-recorded passages, recordings with sections of fade-in or fade-out recording.
- Unrecorded blanks of about 4 seconds in length between the program must be created in order for the music selector function to work properly.
The function may not work if the blanks are too short.
The function may not work properly with prerecorded music tapes which have passages where the sound level is particularly low or which have passage of unrecorded sound.
- In cases such as classic music, when a low level of sound continues in the program.
- Do not use pause between music pieces during D.M.S. operation. (This may cause erroneous operation for counting of the number of music pieces.)
- On a music tape to be played back with direct music select, there has to be an unrecorded space of at least four seconds between the end of the last tune on the tape and the beginning of the leader tape; if there is not, an operational error may occur.
- Additional settings of song numbers not yet used can be made while D.M.S. playback is in progress.
However, numbers of songs already played-back by D.M.S. should not be re-entered during D.M.S. playback because the next D.M.S. song number will be cancelled each time the select key of a previously played song is pressed.
- Do not cancel D.M.S. playback during about the first 8 seconds of a song to prevent an erroneous operation when D.M.S. playback is used again.
- Check the total number of songs on a cassette before entering song numbers for D.M.S. playback.
If a non-existent song number is entered (for example, song 6 for a cassette side having only 5 songs), the D.M.S. function may not operate properly.
If this occurs, press the stop Button.

DISASSEMBLY INSTRUCTIONS

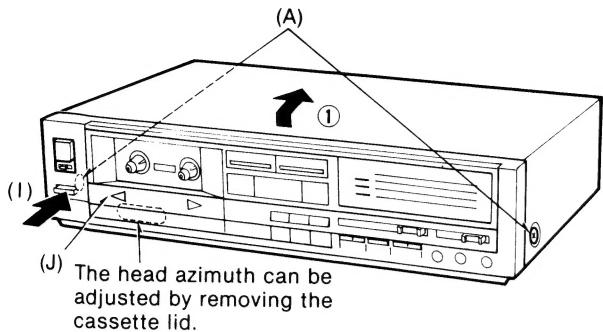


Fig. 1

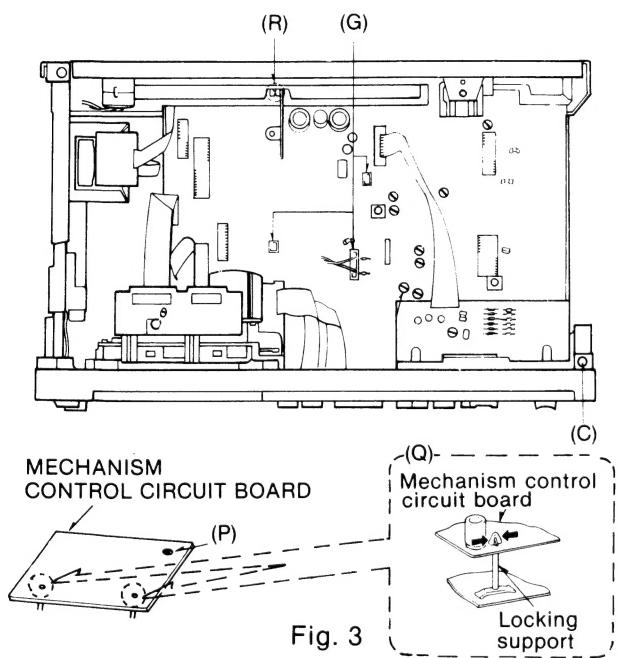
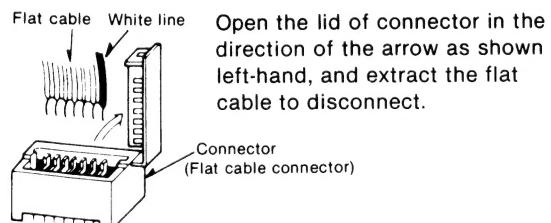
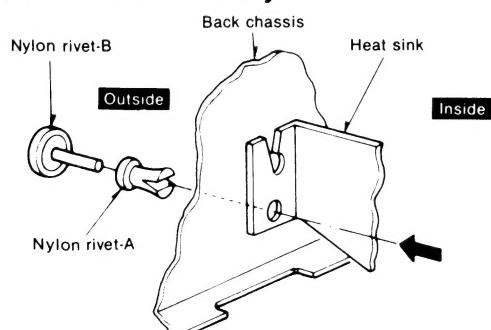


Fig. 3

(H) How to remove flat cable**(R) How to remove nylon rivet**

To remove a heat sink from the back chassis, first press nylon rivet-A from the inside in the direction indicated by the arrow as shown above, and extract the rivet to the outside. Next remove nylon rivet-B from the outside. Consequently, the heat sink can be removed from the back chassis.

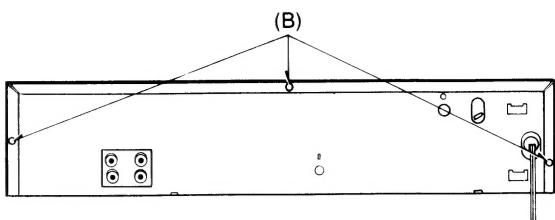


Fig. 2

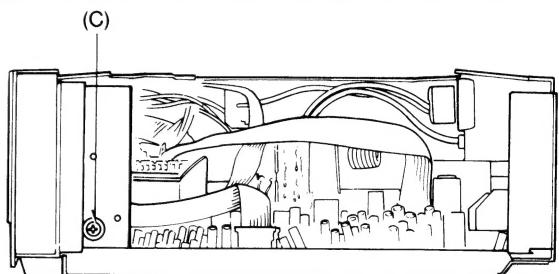


Fig. 4

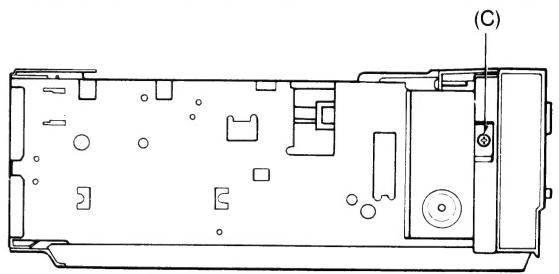


Fig. 5

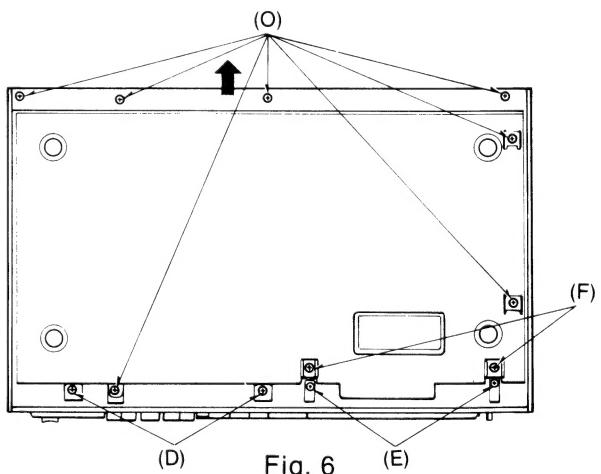


Fig. 6

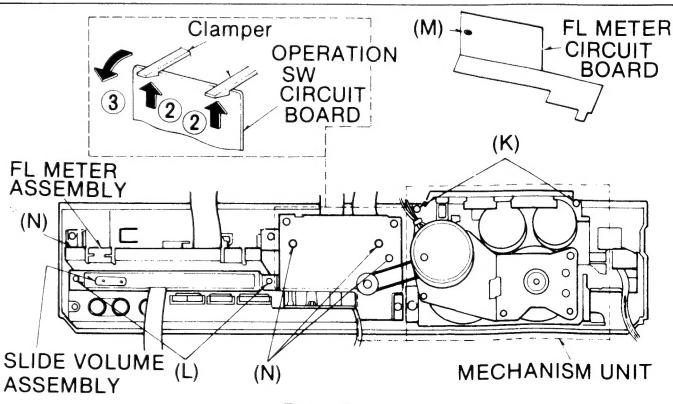


Fig. 7

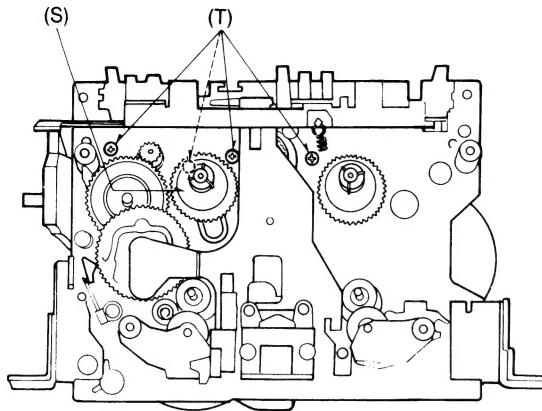


Fig. 8

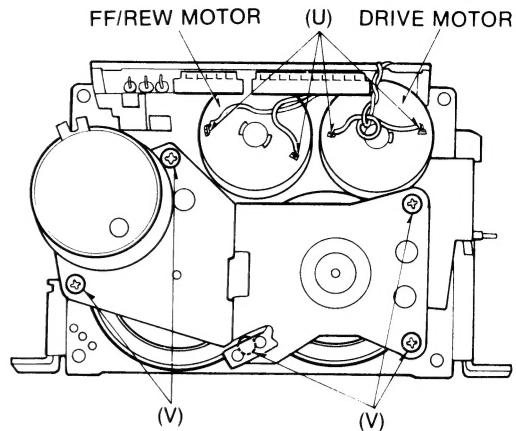


Fig. 9

Ref. No.	Procedure	To remove —.	Remove —.	Shown in fig. —.
1	1	Case cover	<ul style="list-style-type: none"> • 2 ornament screws(A) • 3 screws(B) • As shown in fig. 1, pull case cover in the direction of arrow ①. 	1 2 1
2	1 → 2	Front panel assembly and mechanism unit	<ul style="list-style-type: none"> • 3 screws(C) • 2 screws(D) • 2 screws(E) • 2 screws(F) • Pull out the connectors A B F G H N O P Q R W I(G) • How to remove flat cable(H) 	3, 4, 5 6 6 6 3 3
3	1 → 3	Mechanism unit	<ul style="list-style-type: none"> • Push the eject button(I) • Cassette lid(J) • 2 screws(E) • 2 screws(F) • 2 screws(K) 	1 1 6 6 7
4	1 → 4	Slide volume assembly	<ul style="list-style-type: none"> • 2 screws(L) 	7
5	1 → 4 → 5	FL meter circuit	<ul style="list-style-type: none"> • 1 screw(M) • 4 screws(N) • As shown in fig. 7, raise the clamp in the direction of arrow ② and remove the FL meter circuit in the direction of arrow ③. 	7 7 7
6	6	Bottom cover	<ul style="list-style-type: none"> • 2 screws(D) • 2 screws(F) • 7 screws(O) • Slide the bottom cover in the direction arrow ④ and remove it. 	6 6 6 6
7	1 → 6 → 7	Mechanism control circuit board	<ul style="list-style-type: none"> • 1 screw(C) • 1 screw(P) • How to remove flat cable(H) • Remove the locking support from the board while pushing its tip in the direction of arrow.(Q) 	4 3 3 3
8	1 → 6 → 7 → 8	Main circuit board	<ul style="list-style-type: none"> • How to remove nylon ribet(R) 	3
9	1 → 3 → 9	FF/REW motor and driver motor	<ul style="list-style-type: none"> • Remove the reel table(S) • 4 screws(T) • Un solder the soldered portion of the FF/REW motor terminal and driver motor terminal(U) 	8 8 9
10	1 → 3 → 10	Capstan motor	<ul style="list-style-type: none"> • 5 screws(V) 	9

PRECAUTIONS IN DISASSEMBLY AND REASSEMBLY

Removing the Mode Select Button

The Mode Select Buttons are press-fit with the Button Bushings, as shown in Fig. 10, with the Front Panel Assembly and Button Springs between them. Remove the Button Bushings using pliers to disassemble these parts. Be careful not to lose the Button Springs as they will pop out.

Reassembling the Mechanism Unit

- For repair, measurement or adjustment with the mechanism removed from the unit be sure to ground the lower base plate of the mechanism.

For grounding, connect a extension cord to the mechanism's lower base plate and the lug terminal from amplifier printed circuit board.

Without grounding, the mechanism does not operate properly. (Refer to Fig. 11).

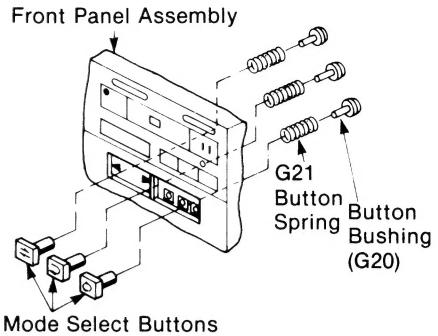


Fig. 10

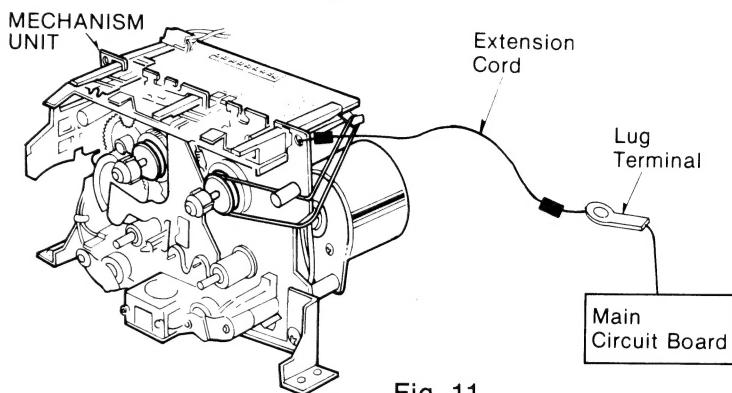


Fig. 11

PRECAUTIONS FOR PARTS REPLACEMENT

Replacement of the Blank Skip/Time/Tape, Counter Reset and DMS (1—12) Buttons.

The Blank Skip, Time Count and Tape Count Buttons are a one-piece resin molded part (It is supplied as a single part.).

As shown in Fig. 1, this buttons are fixed in such a manner that the Front Panel Assembly is sandwiched between the Ornament Plate (G5-1) and the buttons and five pins (A) are melted by heat. (Five pins (B) are used to fix the Ornament Plate. Refer to Fig. 2.)

To remove this part, first, remove the two lugs on the Ornament Plate from the Front Panel. Then, while pulling part (C) of the Ornament Plate toward the front, heat the ten pins (A) and (B) with a soldering iron. (Refer to the Fig. 2.) When the button retainer plate is removed at this time, buttons DMS 1 to 12 can be replaced.

As mentioned above, this part is fixed by melting the pins by heat, both the Ornament Plate and button must be replaced when replacement is required.

Replacement of Parts on the Keyboard Circuit

To replace the parts on the keyboard circuit, first, remove the eight screws (F), and then desolder two terminals (G) of LED's (D519). The Operation Chassis can then be removed from the Base Plate and the parts be replaced. (Refer to Fig. 3).

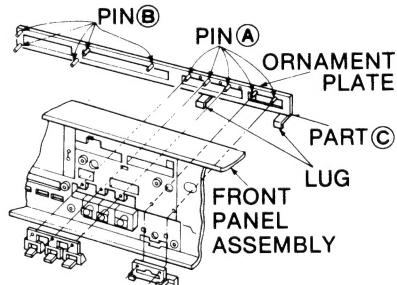
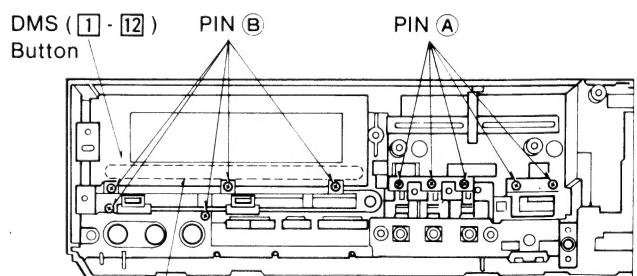


Fig. 1



Button Retainer Plate Fig. 2

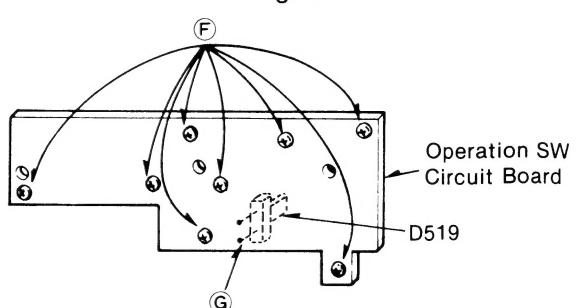


Fig. 3

REPLACING ROTARY HEAD ASSEMBLY

Considerations in mounting the rotary head assembly

1. This recorder requires a record/playback head of extremely precise head height. In replacing the rotary head, install a factory-adjusted full rotary head assembly.
[Never attempt to disassemble the rotary head assembly by removing screws (A).]
2. In installing the replacement rotary head assembly, make certain that the change gear is placed at location (B) on the change rod. (See Fig. 1.)
3. Trace the record/playback head lead-wire as follows (Refer to Fig. 2.):
 - Set the record/playback head in its forward stop direction.
 - At this time, hook the head wire to the clamer of the pinch roller R, and press the head wire in the direction of the arrow as shown in Fig. 2 so that it is bent approximately 90 degrees. Then secure the wire on the mechanism unit using a cord clamper.

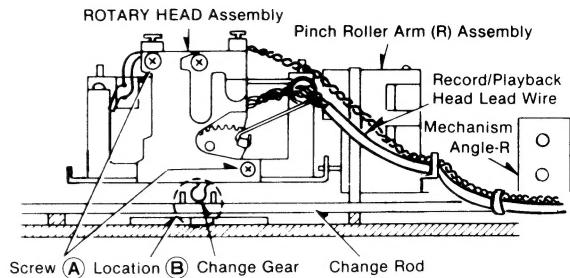


Fig. 1

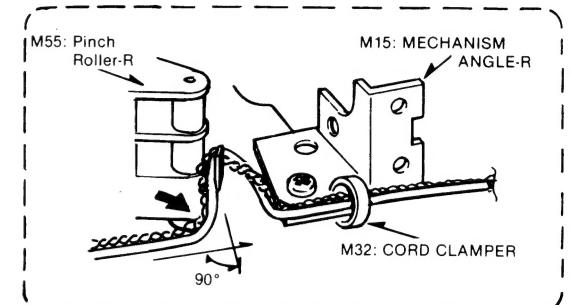


Fig. 2

MEASUREMENT AND ADJUSTMENT METHODS

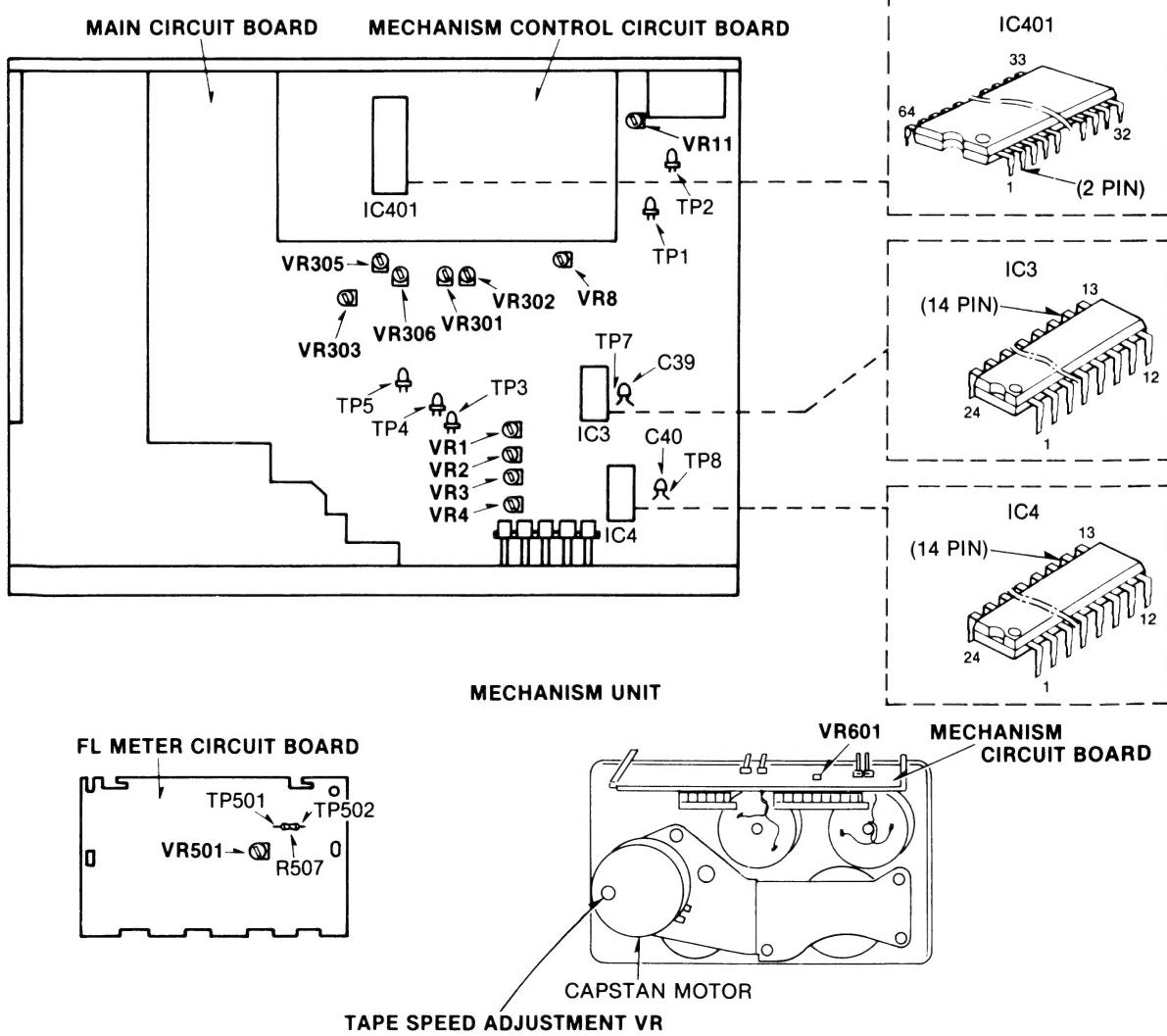


Fig. 1

NOTES: Set switches and controls in the following positions, unless otherwise specified.

- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature $20 \pm 5^\circ\text{C}$ ($68 \pm 9^\circ\text{F}$)
- NR switch: OUT
- Timer start switch: OFF
- Balance control: Center
- Input level control: Maximum
- Output level control: Maximum
- Mode switch:  mode
- Blank skip switch: OFF
- Music select switch: OFF
- Music repeat switch: OFF

Ⓐ Head adjustment

Condition:

- Playback mode
(Forward • Reverse)
- Normal tape mode

Equipment:

- VTVM
- Oscilloscope
- Test tape (azimuth)... QZZCFM
- Test tape QZZCRD

HEAD HEIGHT ADJUSTMENT

1. Turn the erase head height adjustment screws on the rotary head assembly counterclockwise until the upper end face of the erase heads is aligned on the same plane as the top face of their respective guide pins. (Refer to figs. 2 and 3.)
2. Put a point ink-mark on the head of each  adjustment screw.
3. With the marks as guides, turn the erase head height adjustment screw 3.2 turns clockwise. 

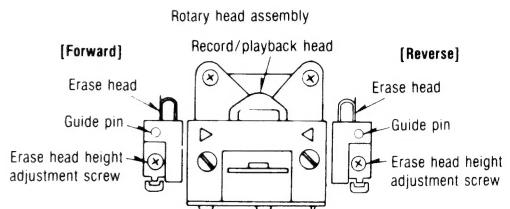


Fig. 2

4. Install a test tape (tape with mirror: QZZCRD) on the recorder; place the recorder in the FORWARD PLAY mode. Make fine adjustments of the erase head height as necessary, to attain on the record/playback head face the tape position shown in fig. 4.
5. Run the tape in the forward play mode and check it for zigzag running. (Shown in fig. 4)
If zigzag tape running occurs, repeat step 4.
6. Place the recorder in the reverse play mode and perform the above steps 4 and 5.
7. Repeat steps 5 and 6 two or three times and verify that the tape position shown in fig. 4 is ensured.

Align between the top face of the guide pin and the upper end face of the erase head.

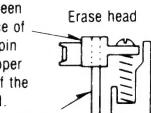


Fig. 3

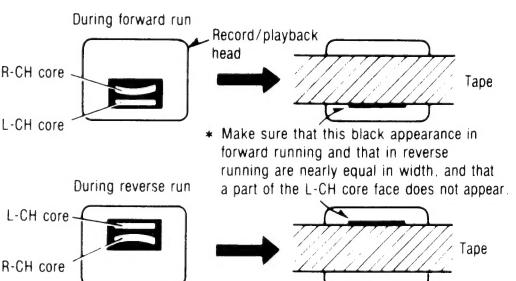


Fig. 4

L-CH/R-CH output balance adjustment

8. Make connections as shown in fig. 5.
9. In the forward playback mode, playback the 8kHz signal from the test tape (QZZCFM). Adjust the azimuth screw (Forward) shown in fig. 6 for maximum output L-CH and R-CH levels.
When the output levels of L-CH and R-CH are not at maximum at the same point adjust as follows.
10. Turn the azimuth screw (Forward) shown in fig. 6 to find angles A and C (points where peak output levels for left and right channels are obtained). Then, locate angle B between angles A and C, i.e., point where L-CH and R-CH outputs are balanced. (Refer to figs. 6 and 7.)
11. In the reverse playback mode, adjust the azimuth screw (reverse) in the same way described above.

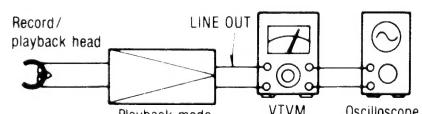


Fig. 5

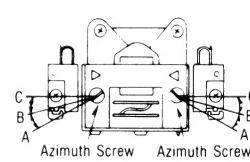


Fig. 6

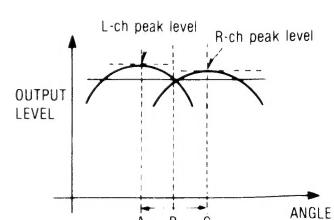


Fig. 7

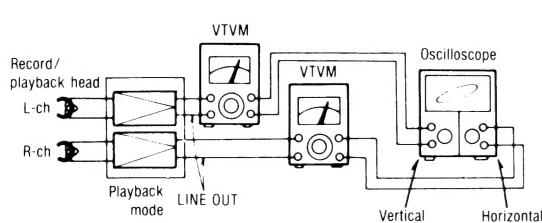


Fig. 8

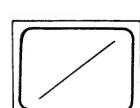


Fig. 9

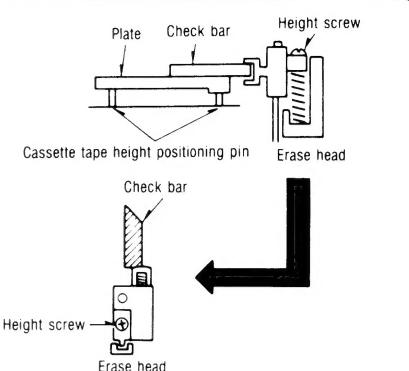
Checking the difference in level between forward and reverse running

15. Reproduce the playback level adjustment signal (315Hz at 0dB) on the standard playback adjustment tape; and check that the difference between the level in forward running and that in reverse running is within 1.0dB.
16. After adjustment, lock the erase head height and angle adjustment screws.

Head Height Adjustment using the Head Adjustment Jig (QZZ0207)

The head adjustment jig (QZZ0207) enables accurate, speedy head height adjustment in the following manner.

- a. Place the plate onto the mechanism.
- b. Set the mechanism to the PLAY mode.
- c. Place the check bar onto the plate.
- d. Pass the check bar through each erase head.
- e. Adjust the height screw so that the check bar does not touch any of the erase heads.
- f. Run a mirror tape (QZZCRD) and check to see that the tape does not touch (twist around, etc.) the erase heads.
- g. After that, adjust items 4 thru 13 in the adjustment procedure.



B Takeup torque

Condition:
• Playback mode

Equipment:
• DC voltmeter
• Test tape...QZZSRKCT

1. Set the test tape (or RT-60) into the cassette holder.
2. Adjust the takeup torque adjusting potentiometer VR601 in the forward playback mode for 3.5 volts between the FF/REW motor terminals.
3. Run the QZZSRKCT takeup torque measurement tape in the forward playback mode and check that the torque is within quoted tolerance.

Standard value: $50 \pm 10 \text{ gr-cm}$

C Tape speed

Condition:
• Playback mode

Equipment:
• Digital frequency counter
• Test tape...QZZCWAT

Tape speed accuracy

1. Test equipment connection is shown in fig. 10.
2. Playback test tape (QZZCWAT 3,000Hz), and supply playback signal to the digital frequency counter.
3. Measure this frequency.
4. On the basis of 3,000Hz, determine value by following formula:

$$\text{Tape speed accuracy} = \frac{f - 3,000}{3,000} \times 100(\%) \quad \text{where, } f = \text{measured value}$$
5. Take measurement at middle section of tape.

Standard value: $\pm 1.5\%$

6. If measured value is not within the standard value, adjust it by using the tape speed adjustment VR shown in Fig. 1.

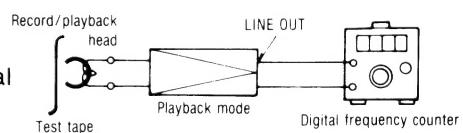


Fig. 10

Tape speed fluctuation

Make measurements in same manner as above (beginning, middle and end of tape), and determine the difference between maximum and minimum values and calculate as follows:

$$\text{Tape speed fluctuation} = \frac{f_1 - f_2}{3,000} \times 100(\%) \quad f_1 = \text{maximum value, } f_2 = \text{minimum value}$$

Standard value: Less than 1%

NOTE:

Please use non metal type screwdriver when you adjust tape speed on this unit.

D Playback frequency response	Condition: • Playback mode (Forward • Reverse) • Normal tape mode	Equipment: • VTVM • Oscilloscope • Test tape...QZZCFM		
<ol style="list-style-type: none"> Test equipment connection is shown in fig. 5. Playback the frequency response portion of test tape (QZZCFM). Measure output level at 315Hz, 12.5kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz and 63Hz, and compare each output level with the standard frequency 315Hz, at LINE OUT. Make measurements for both channels. Make sure that the measured values are within the range specified in the frequency response chart. (Shown in fig. 11). 	Playback frequency response (Forward • Reverse)			
	<p>The chart shows two curves representing the frequency response of the playback system. The x-axis is labeled from 50Hz to 10kHz with major ticks every 100Hz. The y-axis is labeled from -4.5dB to +4.5dB with major ticks every 1dB. The top curve (solid line) starts at +3dB at 60Hz, remains relatively flat until 100Hz, then slopes down to cross 0dB at 315Hz. It then remains flat until 12.5kHz, ending at +4.5dB. The bottom curve (solid line) starts at -2dB at 60Hz, remains flat until 100Hz, then slopes up to cross 0dB at 315Hz. It then remains flat until 12.5kHz, ending at -4.5dB. Dashed lines indicate the 60Hz, 125Hz, and 250Hz points on the x-axis.</p>			
	Fig. 11			
E Playback gain	Condition: • Playback mode • Normal tape mode • Output level control...MAX. • Balance control...Center	Equipment: • VTVM • Oscilloscope • Test tape...QZZCFM		
<ol style="list-style-type: none"> Test equipment connection is shown in fig. 5. Playback standard recording level portion on test tape (QZZCFM 315Hz) and, using VTVM, measure the output level at test points [TP7 (L-CH), TP8 (R-CH)]. Make measurements for both channels. 	Standard value: 0.42 ± 0.05V [around 0.28V: at test points TP7 (L-CH) and TP8 (R-CH)]			
Adjustment				
<ol style="list-style-type: none"> If the measured value is not within standard the adjust VR1 (L-CH) or VR2 (R-CH) (See fig. 1). After adjustment, check "Playback frequency response" again. 				
F Erase current	Condition: • Record mode (Forward • Reverse) • Metal tape mode	Equipment: • VTVM • Oscilloscope		
<ol style="list-style-type: none"> Test equipment connection is shown in fig. 12. Place UNIT into metal tape mode. Press the record and pause buttons. Read voltage on VTVM and calculate erase current by following formula: 	$\text{Erase current (A)} = \frac{\text{Voltage across resistor R201}}{1 (\Omega)}$			
Standard value: 155 ± 15mA (Metal)				
Adjustment				
<ul style="list-style-type: none"> If the measured value is not within standard value, adjust VR305 (Forward) or VR306 (Reverse) (See fig. 1). 				
G Overall frequency response	Condition: • Record/playback mode (Forward • Reverse) • Normal tape mode • CrO ₂ tape mode • Metal tape mode • Input level control...MAX • Output level control...MAX • Balance control...Center	Equipment: • VTVM • ATT • AF oscillator • Oscilloscope • Resistor (600Ω) • Test tape (reference blank tape) ... QZZCRA for Normal ... QZZCRX for CrO ₂ ... QZZCRZ for Metal		

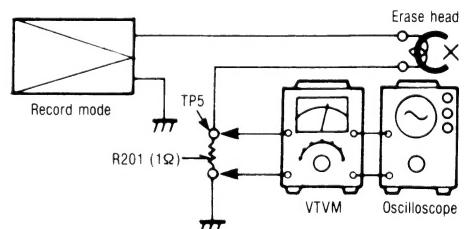


Fig. 12

Note:

Before measuring and adjusting, the overall frequency response make sure of the playback frequency response (For the method of measurement, please refer to the playback frequency response).

(Recording equalizer is fixed)

1. Make connections as shown in fig. 13.
2. Place UNIT into normal tape mode and insert the normal reference blank test tape (QZZCRA).
3. Supply a 1kHz signal from the AF oscillator through ATT to LINE IN.
4. Adjust ATT so that input level is -20dB below standard recording level (standard recording level = 0 VU).
5. Adjust the AF oscillator frequency to 1kHz, 50Hz, 100Hz, 200Hz, 500Hz, 4kHz, 8kHz, 10kHz and 12.5kHz signals, and record these signals on the test tape.
6. Playback the signals recorded in step 5, and check if the frequency response curve is within the limits shown in the overall frequency response chart for normal tapes (fig. 14). (If the curve is within the charted specifications, proceed to steps 7, 8 and 9.)

If the curve is not within the charted specifications, adjust as follows;

Adjustment (A):

When the curve exceeds the overall specified frequency response chart (fig. 14) as shown in fig. 15.

- 1) Increase bias current by turning VR301 (L-CH) and VR302 (R-CH). (See fig. 1 on page 7.)
- 2) Repeat steps 5 and 6 for confirmation (Proceed to steps 7, 8 and 9 if the curve is now within the charted specifications as shown fig. 14.)
- 3) If the curve still exceeds the specifications (fig. 14), increase bias current further and repeat steps 5 and 6.

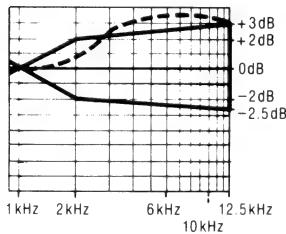


Fig. 15

Adjustment (B):

When the curve falls below the overall specified frequency response chart (fig. 14) as shown in fig. 16.

- 1) Reduce bias current by turning VR301 (L-CH) and VR302 (R-CH).
- 2) Repeat steps 5 and 6 for confirmation (Proceed to steps 7, 8 and 9 if the curve is now within the charted specification as shown fig. 14.)
- 3) If the curve still falls below the charted specifications (fig. 14), reduce bias current further and repeat steps 5 and 6.

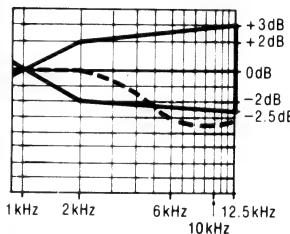


Fig. 16

7. Place UNIT into CrO₂ tape mode.
8. Change test tape to CrO₂ reference blank test tape (QZZCRX), and record 1kHz, 50Hz, 100Hz, 200Hz, 500Hz, 4kHz, 8kHz, 10kHz and 15kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for CrO₂ tapes (fig. 17).
9. Place UNIT into metal tape mode and change test tape to metal reference blank test tape (QZZCRZ), and record 1kHz, 50Hz, 100Hz, 200Hz, 500Hz, 4kHz, 8kHz, 10kHz, 12.5kHz and 15kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for metal tapes (fig. 17).
10. Confirm that bias currents are approximately as follows when the UNIT is set at different tape mode.
 - Read voltage on VTVM between ground and test point (TP3 for L-CH, TP4 for R-CH) and calculate bias current by following formula:

$$\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10 (\Omega)}$$

around 200μA (Normal position)
Standard value: around 250μA (CrO₂ position)
 around 430μA (Metal position)

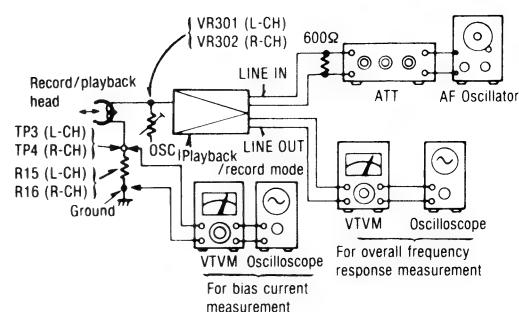


Fig. 13

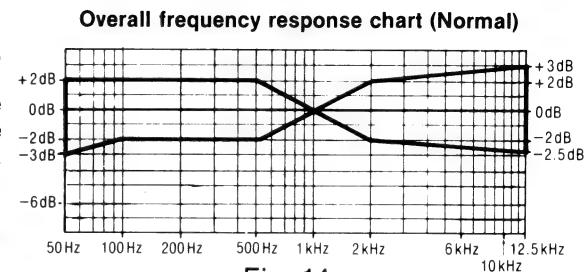


Fig. 14

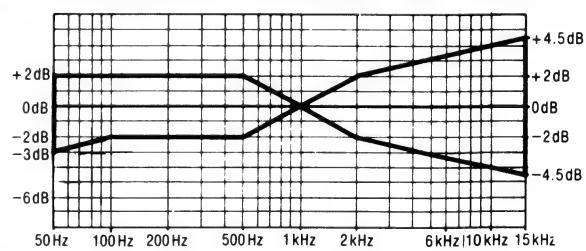
Overall frequency response chart (CrO₂, Metal)

Fig. 17

H Overall gain

Condition:

- Record/playback mode (Forward • Reverse)
- Normal tape mode
- Input level control...MAX
- Output level control...MAX
- Balance control...Center
- Standard input level;

$$\text{MIC} \dots\dots\dots -72 \begin{matrix} +4 \\ -2 \end{matrix} \text{dB}$$

$$\text{LINE IN} \dots\dots\dots -24 \begin{matrix} +4 \\ -2 \end{matrix} \text{dB}$$

Equipment:

- VTVM • AF oscillator
- ATT • Oscilloscope
- Resistor (600Ω)
- Test tape (reference blank tape)

...QZZCRA for Normal

1. Test equipment connection is shown in fig. 18.
2. Insert the normal reference blank tape (QZZCRA).
3. Place UNIT into record mode.
4. Supply a 1kHz signal through ATT (-24dB) from AF oscillator, to LINE IN.
5. Adjust ATT until monitor level at LINE OUT becomes 0.42V.
6. Playback recorded tape, and make sure that the output level at LINE OUT becomes 0.42V.
7. If measured value is not $0.42V \pm 2\text{dB}$, adjust it by using VR3 (L-CH) or VR4 (R-CH).
8. Repeat from step (2).

Standard value: $0.42V \pm 2\text{dB}$
[around 0.28V: at test points TP7 (L-CH) and TP8 (R-CH)]

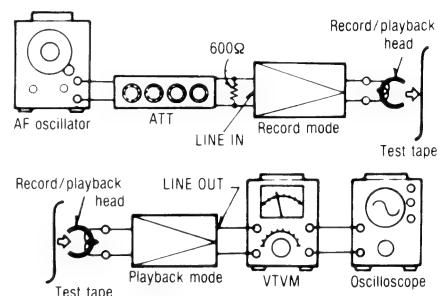


Fig. 18

I Dolby NR circuit

Condition:

- Record mode
- Dolby NR switch...IN/OUT
- Dolby NR select switch...B/C
- Input level control...MAX
- Output level control...MAX
- Balance control...Center

Equipment:

- VTVM • AF oscillator
- ATT • Oscilloscope
- Resistor (600Ω)

Record side

- Check of the Dolby-B type encoder characteristics
 1. Make connections as shown in fig. 19.
 2. Set the unit to the record mode. (NR select switch is OUT.)
 3. Apply a 1kHz signal to LINE IN.
 4. Adjust the ATT so that the output level at TP7 (L-CH) and TP8 (R-CH) is 12.3mV.
 5. The output level at pin 14 should also be 12.3mV. (Let $12.3\text{mV} = 0\text{dB}$ for this adjustment.)
 6. Set the NR select switch to B, and make sure that the output signal level at pin 14 of IC3 (L-CH) and IC4 (R-CH) is $+6\text{dB} \pm 2.5\text{dB}$.
 7. Set the NR select switch to OUT, and adjust the frequency to 5kHz. The output signal level at pin 14 should be 0dB.
 8. Set the NR select switch to B and make sure that the output signal level at pin 14 of IC3 (L-CH) and IC4 (R-CH) is $+8\text{dB} \pm 2.5\text{dB}$.

• Check to Dolby-C type encoder characteristics

9. Repeat steps 1-5 above.
10. Set the NR select switch to C and make sure that the output signal level at pin 14 of IC3 (L-CH) and IC4 (R-CH) is $+11.5\text{dB} \pm 2.5\text{dB}$.
11. Set the NR select switch to OUT and adjust the frequency to 5kHz. The output signal at pin 14 should be 0dB.
12. Set the NR select switch to C and make sure that the output signal level at pin 14 of IC3 (L-CH) and IC4 (R-CH) is $+8.5\text{dB} \pm 2.5\text{dB}$.

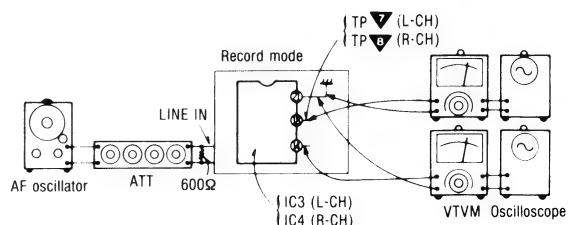


Fig. 19

① Attack recovery time adjustment (dbx circuit)

Condition:

- Record mode
- Input level control...MAX
- Noise reduction selector
...dbx tape

Equipment:

- VTVM
- ATT
- AF oscillator
- DC voltage

1. Make the connections as shown in fig. 20 and apply 1kHz -27dB signal from LINE IN, and set the noise reduction selector to dbx tape position.
2. Set the unit to record mode, adjust ATT so that the signal level at C107 (L-CH) and C108 (R-CH) is 300mV.
3. Read voltage on DC volt meter.

Reference value: $15 \pm 0.5\text{mV}$

4. If measured value is not within reference, adjust VR11 (shown in fig. 1).

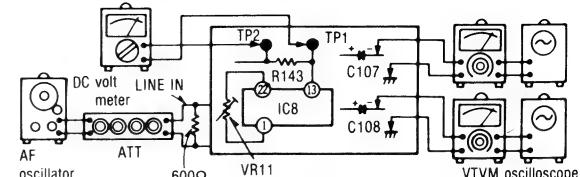


Fig. 20

② Input scanning time adjustment

Condition:

- Stop mode

Equipment:

- Oscilloscope

1. Place the recorder in the stop mode.
2. Connect an oscilloscope to pin 2 of IC401, as shown in fig. 21.
3. Make sure that the measured values are within the reference value.

Reference value: Approx. 4.6msec.

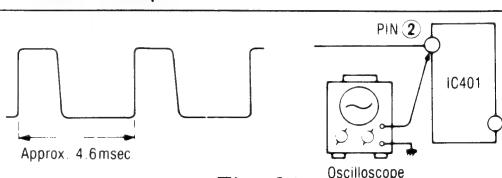


Fig. 21

③ Fluorescent meter

Condition:

- Record mode
- Input level controls...MAX

Equipment:

- VTVM
- ATT
- AF oscillator

• Check for FL meter

To check the accuracy of the FL meter, measure the output level at test point [TP7 (L-CH), TP8 (R-CH)].

1. Make connections as shown (See fig. 22).
2. Connect a wire between TP501 and TP502 terminal (See fig. 23).
3. In the recording pause mode, apply 1kHz (-24dB) to LINE IN.
4. Adjust ATT so that output level at test point [TP7 (L-CH), TP8 (R-CH)] is 0.28V.

Checking FL meter 0dB segment display ON/OFF

Change the output level at test point [TP7 (L-CH), TP8 (R-CH)] from 0.28V -1dB ($\approx 250\text{mV}$) to 0.28V +1dB ($\approx 310\text{mV}$) by adjusting the attenuator, and check that the FL meter 0dB segment display OFF state changes to the ON state.

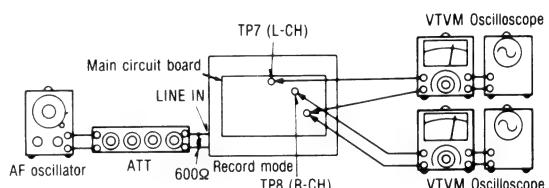


Fig. 22

Checking FL meter -40dB segment display ON/OFF

Lower the signal level 28dB below the standard input level (-24dB-28dB=-52dB $\approx 2.5\text{mV}$) and then further lower the level 12dB (-52dB-12dB=-64dB $\approx 0.63\text{mV}$) by adjusting the attenuator. While lowering the level as described above, make sure that only the -40dB display remains lit the dims or goes off at the lowest level.

• Adjustment for FL meter

1. Make connections as shown (See fig. 22).
2. Connect a wire between TP501 and TP502 terminal (See fig. 23).
3. In the recording pause mode, apply 1kHz (-24dB) to LINE IN.
4. Adjust ATT so that output level at test point [TP7 (L-CH), TP8 (R-CH)] is 0.28V.

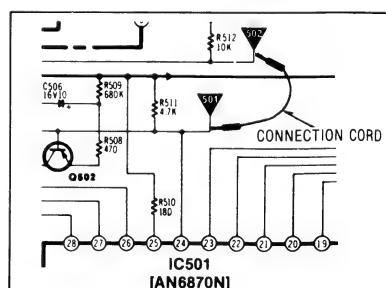


Fig. 23

-40dB adjustment

5. Adjust ATT so that the level adjusted at step 4 is reduced by 40dB.
6. At this time, check that -40dB indicator is dimmed (intermediate brightness between full brightness and light-out: See fig. 24).
7. If the indicator is not lighted halfway as described in step 6, adjust VR8.

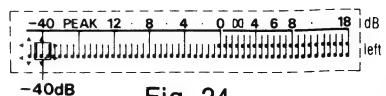


Fig. 24

0dB adjustment

8. Restore the condition of step 4 (set output level to 0.28V at test point [TP7 (L-CH), TP8 (R-CH)].)
9. At this time, check that 0dB indicator is dimmed (intermediate brightness between full brightness and light-out (See fig. 25).
10. If improper, adjust VR501.
11. Repeat adjustments at steps 4, 5, 6, 7, 8, 9 and 10 two or three times.
12. Disconnect the wire between TP501 and TP502 terminal, which had been connected at step 2.



Fig. 25

④ Photo sensor circuit

Condition:
• Playback mode

NOTE:

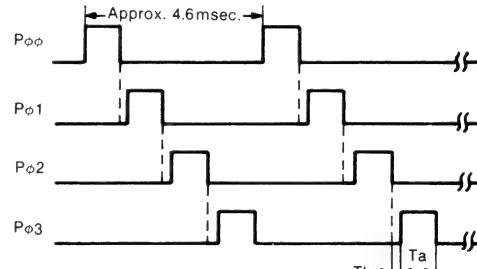
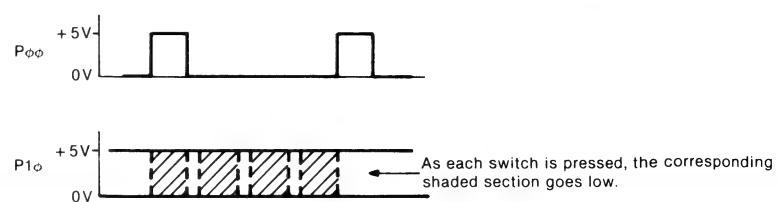
When adjusting the photo sensor circuit, leave the front panel, cassette lid and indication plate in place. (External light can cause the photo sensor in the cassette holder to malfunction and makes accurate adjustment impossible.)

Sensitivity adjustment

Some malfunctions, such as tape reverse or auto stop, may sometimes occur during tape travel according to type and make of tape. If the trouble is caused only by tape wrinkles, perform the following adjustments.

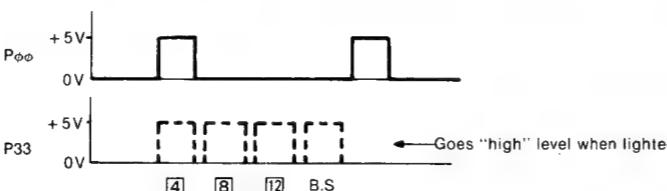
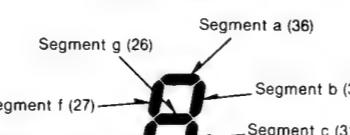
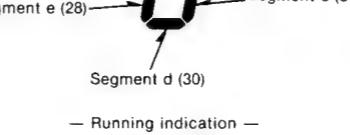
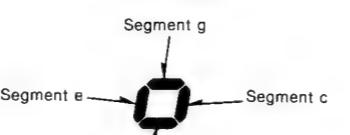
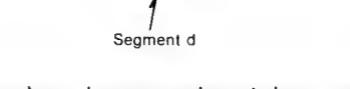
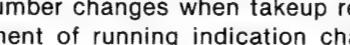
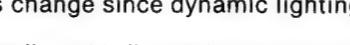
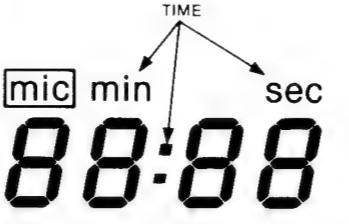
1. While playing the section causing malfunction, adjust VR303 so that normal operation is obtained. (Shown in fig. 1).
2. Then play the leader tape section and check for normal operation (that tape reverse and auto stop are eliminated).

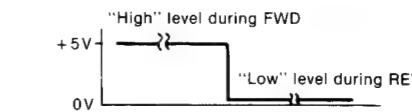
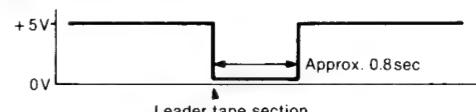
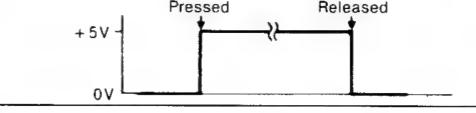
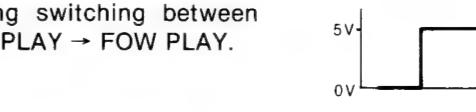
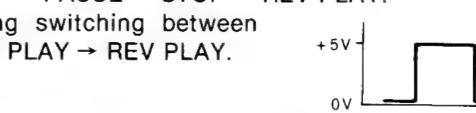
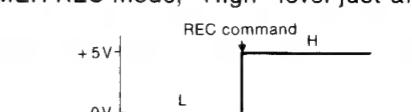
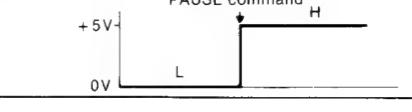
MICROCOMPUTER TERMINAL FUNCTION AND WAVEFORM (IC401: MN1564RME)

Terminal No.	Symbol	Name	Function/operation
1.	VSS	GND	
2.	P _{φφ}	FL grid & input switch scanning	 <p>Pulse width: Ta = Approx. 1.0msec, Tb = Approx. 80μsec.</p>
3.	P _{φ1}		
4.	P _{φ2}		
5.	P _{φ3}		
6.	ST0	—	• Non connection.
7.	P _{1φ}	Reading of input switch state REW • STOP • TIME	<ul style="list-style-type: none"> • Reads switch inputs corresponding to scanning of P_{φφ} to P_{φ3}. 

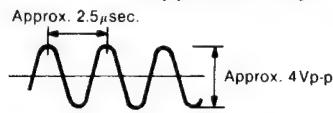
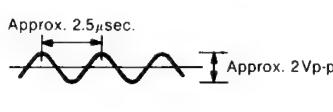
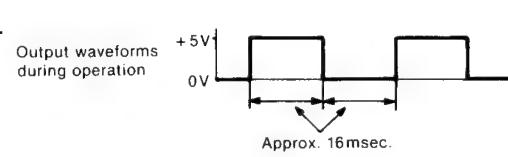
Terminal No.	Symbol	Name	Function/operation
8.	P11	Reading of input switch state FF • PAUSE • TAPE	<ul style="list-style-type: none"> • Reads switch inputs corresponding to scanning of P_{φφ} to P_{φ3}. <p>As each switch is pressed, the corresponding shaded section goes low.</p>
9.	P12	Reading of input switch state REC • PLAY • TIMER PLAY • COUNTER RESET	<ul style="list-style-type: none"> • Reads switch inputs corresponding to scanning of P_{φφ} to P_{φ3}. <p>As each switch is pressed, the corresponding shaded section goes low.</p>
10.	P13	Reading of input switch state DIR • TIMER REC	<p>As each switch is pressed, the corresponding shaded section goes low.</p>
11.	ST1		Non connection.
12.	SYNC		
13.	SIRQ		SYNC: Output waveforms during operation.
14.	IRQ		
15.	SBT		
16.	SBD		
17.	RST	Reset terminal	<ul style="list-style-type: none"> • Terminal for reset signal to computer. • Automatically reset at not more than 3.5 to 4.0V.
18.	P2φ	Reading of input switch state AUTO REC MUTE • ① • ⑤ • ⑨	<ul style="list-style-type: none"> • Reads switch inputs corresponding to scanning of P_{φφ} to P_{φ3}. <p>As each switch is pressed, the corresponding shaded section goes low.</p>

Terminal No.	Symbol	Name	Function/operation
19.	P21	Reading of input switch state DMS • ② • ⑥ • ⑩	<ul style="list-style-type: none"> • Reads switch inputs corresponding to scanning of P_{φφ} to P_{φ3}. <p>As each switch is pressed, the corresponding shaded section goes low.</p>
20.	P22	Reading of input switch state REPEAT • ③ • ⑦ • ⑪	<ul style="list-style-type: none"> • Reads switch inputs corresponding to scanning of P_{φφ} to P_{φ3}. <p>As each switch is pressed, the corresponding shaded section goes low.</p>
21.	P23	Reading of input switch state B.S • ④ • ⑧ • ⑫	<ul style="list-style-type: none"> • Reads switch inputs corresponding to scanning of P_{φφ} to P_{φ3}. <p>As each switch is pressed, the corresponding shaded section goes low.</p>
22.	P3φ	Dynamic lighting indication FWD • ① • ⑤ • ⑨ LED	<ul style="list-style-type: none"> • Four corresponding LEDs light one at a time in accordance with the scanning of P_{φφ} to P_{φ3}.
23.	P31	Dynamic lighting indication REV • ② • ⑥ • ⑩ LED	<ul style="list-style-type: none"> • Four corresponding LEDs light one at a time in accordance with the scanning of P_{φφ} to P_{φ3}.
24.	P32	Dynamic lighting indication REPEAT • ③ • ⑦ • ⑪ LED	<ul style="list-style-type: none"> • Four corresponding LEDs light one at a time in accordance with the scanning of P_{φφ} to P_{φ3}.

Terminal No.	Symbol	Name	Function/operation
25.	P33	Dynamic lighting indication B.S. • 4 • 8 • 12	<ul style="list-style-type: none"> Four corresponding LEDs light one at a time in accordance with the scanning of P_{φφ} to P_{φ3}. 
26.	P4φ	FL counter Segment g	<p>— Number indication —</p> 
27.	P41	FL counter Segment f	
28.	P42	FL counter Segment e	
29.	P43	TIME	<p>— Running indication —</p>  <p>5V --- ON 0V OFF</p>
30.	P5φ	FL counter Segment d	
31.	P51	FL counter Segment c	
32.	P52	FL counter Segment b	
36.	P53	FL counter Segment a	<p>Counter number changes when takeup reel table rotates two turns. Each segment of running indication changes when the reel table rotates a half turn. Waveforms change since dynamic lighting is used.</p> <ul style="list-style-type: none"> “min”, “sec”, and “:” are displayed when the TIME signal is given. 
33.	VDD	Power supply terminal	<ul style="list-style-type: none"> Operative on 4.5 to 5.5 volts (typically 5.4 volts).
34.	VMM	Power supply terminal for the memory	<ul style="list-style-type: none"> Operative on 4.5 to 5.5 volts (typically 5.4 volts).
35.	HLD _M	Power hold instruction terminal for the memory	<ul style="list-style-type: none"> Operative on 4.5 to 5.5 volts (typically 5.4 volts).
37.	P6φ	Reading of input switch state FWD REC INH	<ul style="list-style-type: none"> “High” level when a tape not prepared with miserase prevention masking is loaded. “Low” level with the cassette lid open.
38.	P61	Reading of input switch state REV REC INH	<ul style="list-style-type: none"> “High” level when a tape not prepared with miserase prevention masking is loaded. “Low” level with the cassette lid open.

Terminal No.	Symbol	Name	Function/operation
39.	P62	Reading of input switch state CAM A (S607)	 <p>“High” level during FWD +5V 0V “Low” level during REV</p>
40.	P63	Reading of input switch state CAM B (S606)	<ul style="list-style-type: none"> Input in switching-over from FWD PLAY to REV PLAY.  <p>DIRECTION SW +5V 0V 20msec. 55msec. 130msec. 70msec. 30msec.</p>
41.	P7φ	Reading of input switch state Half det. (S603)	<ul style="list-style-type: none"> Goes “low” level when a cassette tape is loaded and the cassette lid is closed. “High” level with the cassette lid open.
42.	P71	Leader tape det	<ul style="list-style-type: none"> “Low” level pulses are generated between the leader tape section and the magnetic section.  <p>+5V 0V Leader tape section Approx. 0.8 sec</p>
43.	P72	Detection of music intervals	<ul style="list-style-type: none"> Goes low during a portion between music pieces (no signal portion).
44.	P73		<ul style="list-style-type: none"> Non connection.
45.	P80	Muting for all amplifiers	<ul style="list-style-type: none"> “High” level during FF, REW and STOP. “Low” level during REC, PLAY and CUE/REV.
46.	P81	CUE/REVIEW MUTE	<ul style="list-style-type: none"> “High” level pulse with CUE/REVIEW button pressed during PLAY.  <p>+5V 0V Pressed Released</p>
47.	P82	Drive motor CCW rotation command	<ul style="list-style-type: none"> “High” level pulse in each mode in operational sequence REV PLAY → PAUSE → STOP → FOW PLAY. During switching between REV PLAY → FOW PLAY.  <p>+5V 0V</p>
48.	P83	Drive motor CW rotation command	<ul style="list-style-type: none"> “High” level pulse in each mode in operational sequence FOW PLAY → PAUSE → STOP → REV PLAY. During switching between FWD PLAY → REV PLAY.  <p>+5V 0V</p>
49.	P9φ	REC indication output	<ul style="list-style-type: none"> “High” level concurrently with REC command. In TIMER REC mode, “High” level just after power on.  <p>+5V 0V REC command H L</p>
50.	P91	PAUSE indication output	<ul style="list-style-type: none"> “High” level concurrently with PAUSE command.  <p>+5V 0V PAUSE command H L</p>

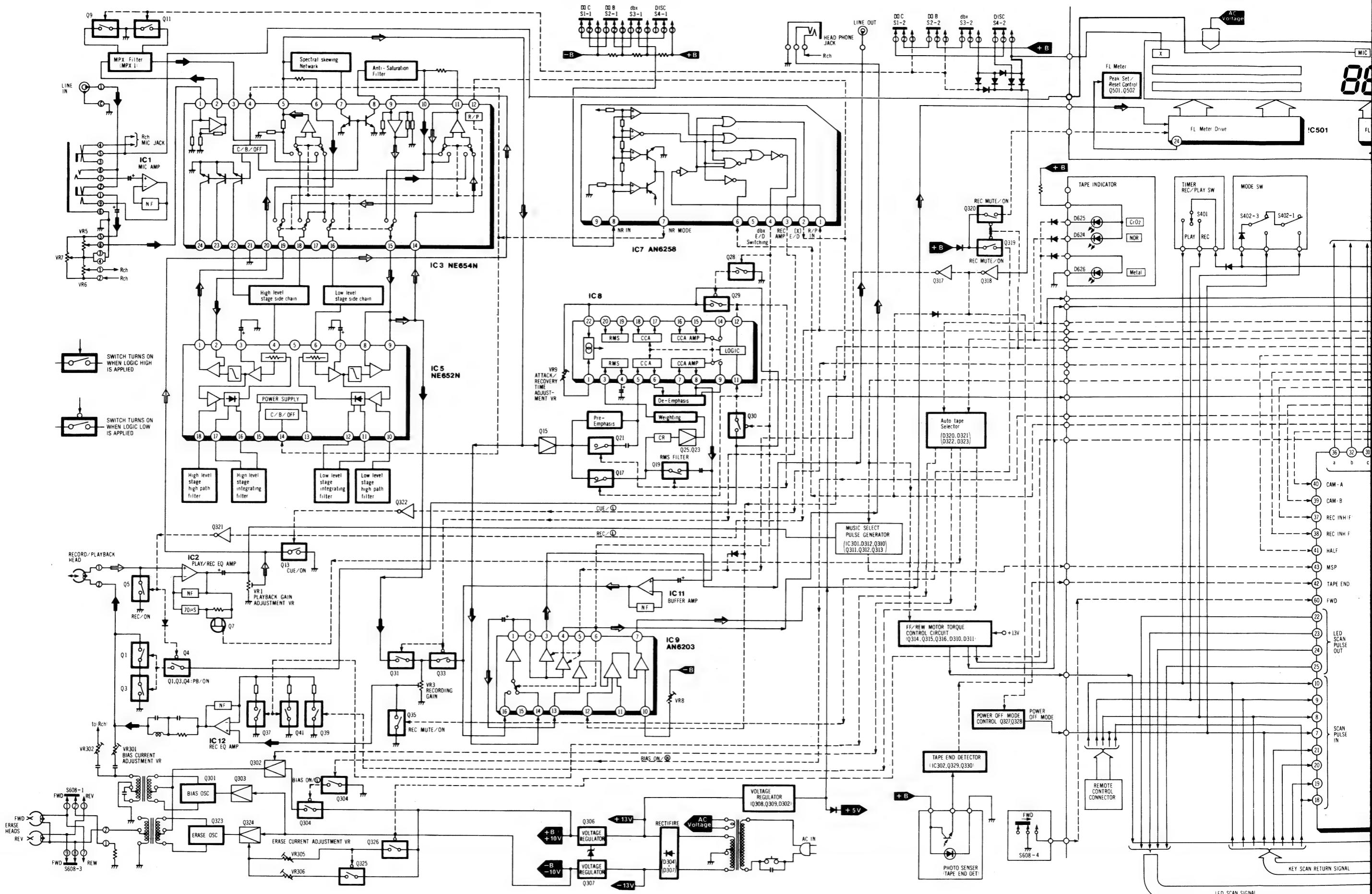
Terminal No.	Symbol	Name	Function/operation
51.	P92	Reel takeup torque selection and PLAY indication output	<ul style="list-style-type: none"> “High” level during PLAY. “Low” level during FF, REW and STOP.
52.	P93	DIRECTION indication output	<ul style="list-style-type: none"> “Low” level during FORWARD. “High” level during REVERSE.
53.	PA ϕ	Bias oscillation ON/OFF	<ul style="list-style-type: none"> Goes to “Low” immediately after REC/PAUSE operation. Remains in “Low” during REC/PLAY operation. Goes to “Low” approximately 20msec after the STOP command is given.
54.	PA1	REC MUTE	<ul style="list-style-type: none"> “High” level pulse with REC MUTE button pressed during REC PLAY.
55.	PA2	FF/REW motor rotation select (FF/REW motor CCW rotation command)	<ul style="list-style-type: none"> “High” level during: { FWD PLAY FWD F.F REV REW }
56.	PA4	FF/REW motor rotation select (FF/REW motor CW rotation command)	<ul style="list-style-type: none"> “High” level during: { REV PLAY REV F.F FWD REW }
57.	PB ϕ	Reel table rotation detection-1 (tape counter)	<ul style="list-style-type: none"> Rotation pulses are generated according to the rotation speed of the take-up reel table in the FWD mode. Two pulses are generated per reel table rotation.
58.	PB1	Reel table rotation detection-2 (tape counter)	
59.	PB2	Output mute during power on	<ul style="list-style-type: none"> Goes “high” level when power is on. This terminal goes “low” level when terminal 17 goes “high” level.
60.	PB3	Input switch reading Head rotation direction detection (S608)	<ul style="list-style-type: none"> “High” level during FORWARD.

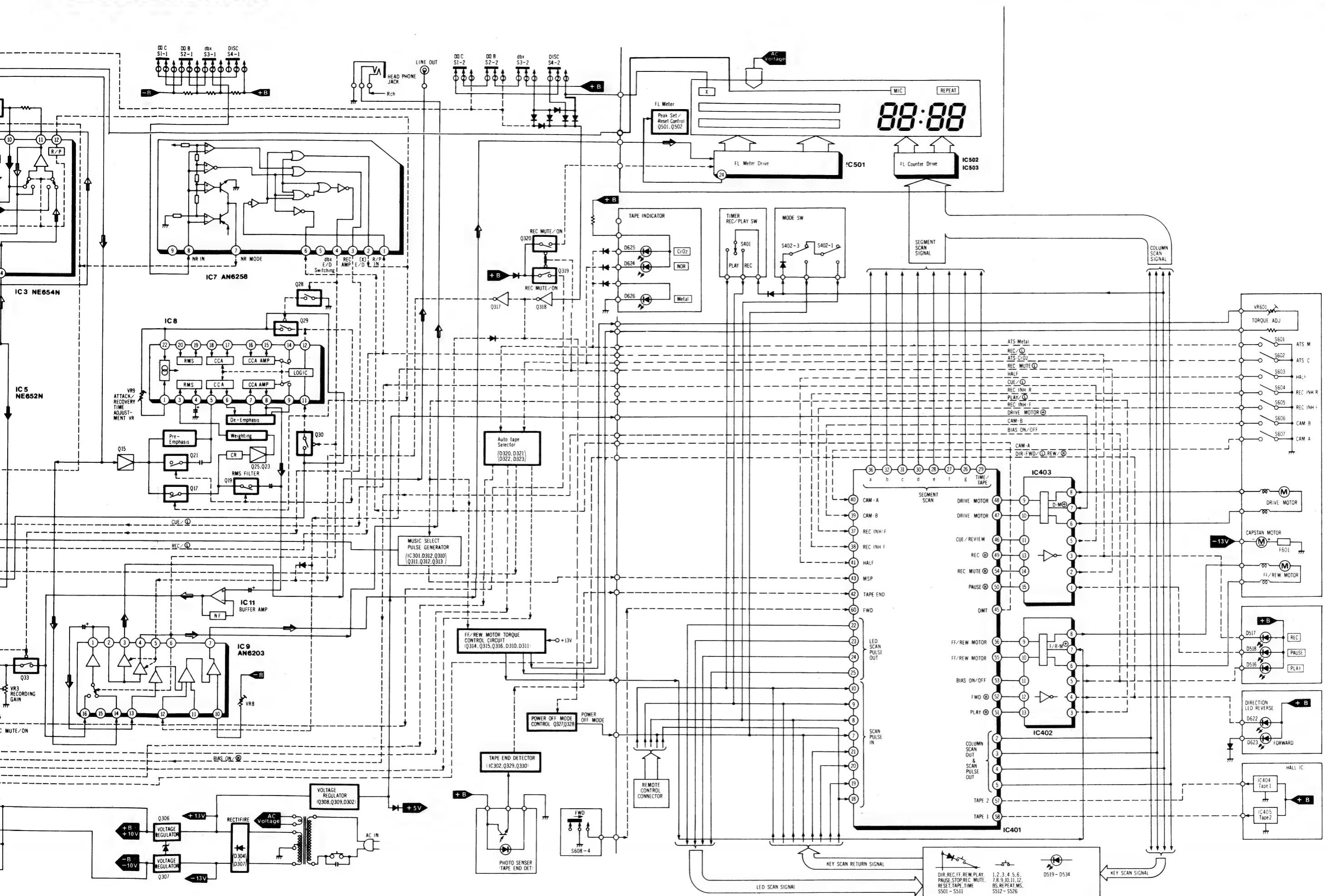
Terminal No.	Symbol	Name	Function/operation
61.	OSC2	Terminals for connecting the oscillator device of a clock	<ul style="list-style-type: none"> Generates oscillation at approximately 4MHz. 
62.	OSC1	Terminals for connecting the oscillator device of a clock	
63.	TC1	—	<ul style="list-style-type: none"> Non connection.
64.	TCφ	—	<ul style="list-style-type: none"> Non connection. 

NOTES (for Block diagram)

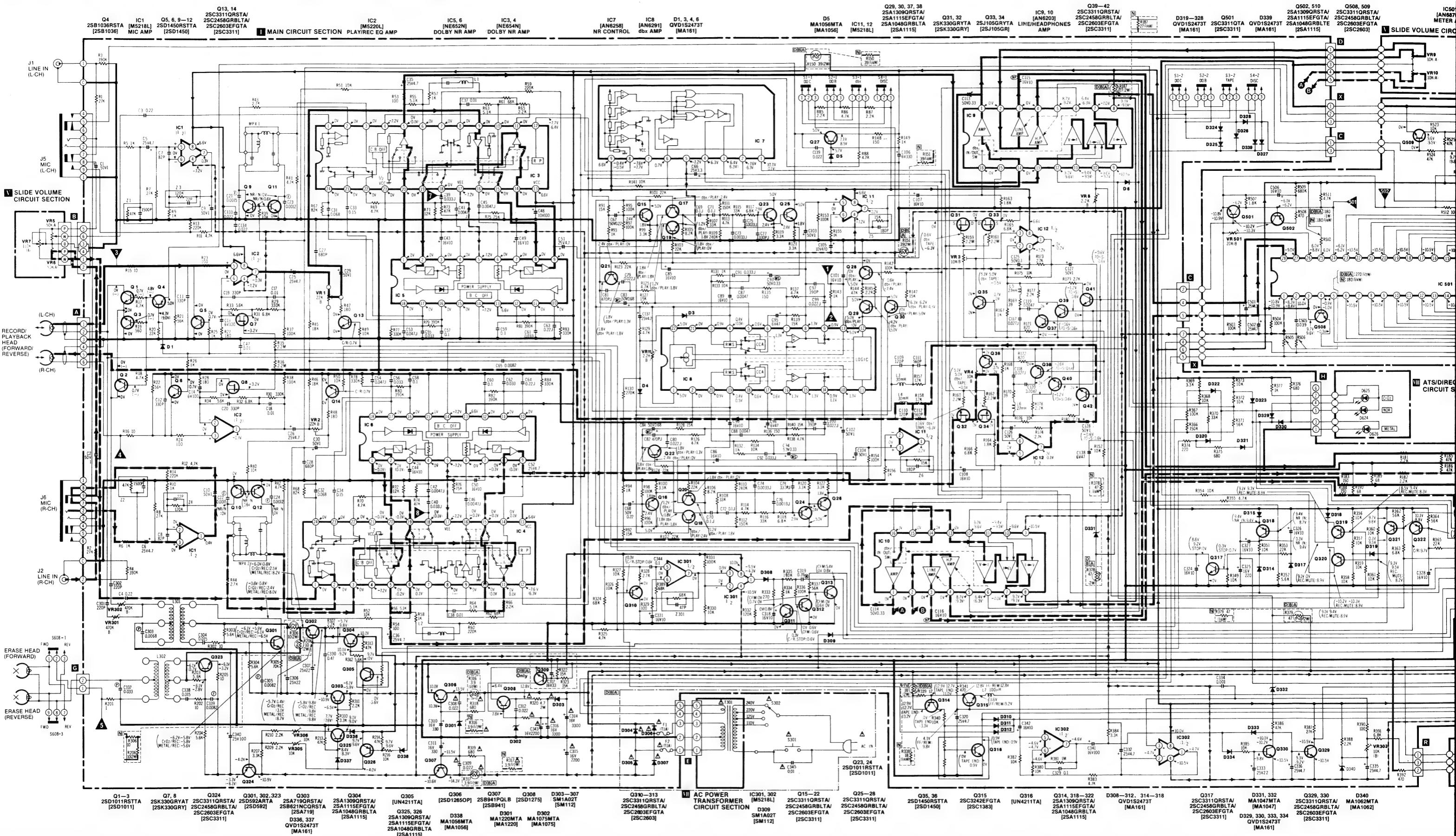
- S1-1, S1-2..... Dolby-C IN/OUT switch (shown in OUT position).
- S2-1, S2-2..... Dolby-B IN/OUT switch (shown in OUT position).
- S3-1, S3-2..... dbx "Tape" IN/OUT switch (shown in OUT position).
- S4-1, S4-2..... dbx "Disc" IN/OUT switch (shown in OUT position).
- S301..... Power ON/OFF switch (shown in OFF position).
- S302..... AC power voltage select switch.
- S401..... Timer REC/PLAY switch (shown in Timer REC position).
- S402-1, S402-2..... Mode select switch (○ / ←).
- S501..... Direction switch (shown in OFF position).
- S502..... Record switch (shown in OFF position).
- S503..... F.F switch (shown in OFF position).
- S504..... Rewind switch (shown in OFF position).
- S505..... Play switch (shown in OFF position).
- S506..... Pause switch (shown in OFF position).
- S507..... Stop switch (shown in OFF position).
- S508..... Auto-Rec mute switch (shown in OFF position).
- S509..... Counter Reset switch (shown in OFF position).
- S510..... Tape counter switch (shown in OFF position).
- S511..... Time counter switch (shown in OFF position).
- S512..... D.M.S. [1] switch (shown in OFF position).
- S513..... D.M.S. [2] switch (shown in OFF position).
- S514..... D.M.S. [3] switch (shown in OFF position).
- S515..... D.M.S. [4] switch (shown in OFF position).
- S516..... D.M.S. [5] switch (shown in OFF position).
- S517..... D.M.S. [6] switch (shown in OFF position).
- S518..... D.M.S. [7] switch (shown in OFF position).
- S519..... D.M.S. [8] switch (shown in OFF position).
- S520..... D.M.S. [9] switch (shown in OFF position).
- S521..... D.M.S. [10] switch (shown in OFF position).
- S522..... D.M.S. [12] switch (shown in OFF position).
- S523..... D.M.S. [13] switch (shown in OFF position).
- S524..... Blank Skip switch (shown in OFF position).
- S525..... Repeat switch (shown in OFF position).
- S526..... D.M.S. FWD/REV switch.
- S601..... Auto tape select switch (for Metal tape).
- S602..... Auto tape select switch (for CrO₂ tape).
- S603..... Cassette half switch (shown in OFF position).
- S604..... FWD Rec inhibit switch (shown in OFF position).
- S605..... REV Rec inhibit switch (shown in OFF position).
- S606..... FWD/REV changing switch (shown in OFF position).
- S607..... Mode changing switch (shown in OFF position).
- S608..... FWD/REV detection switch (shown in FWD position).

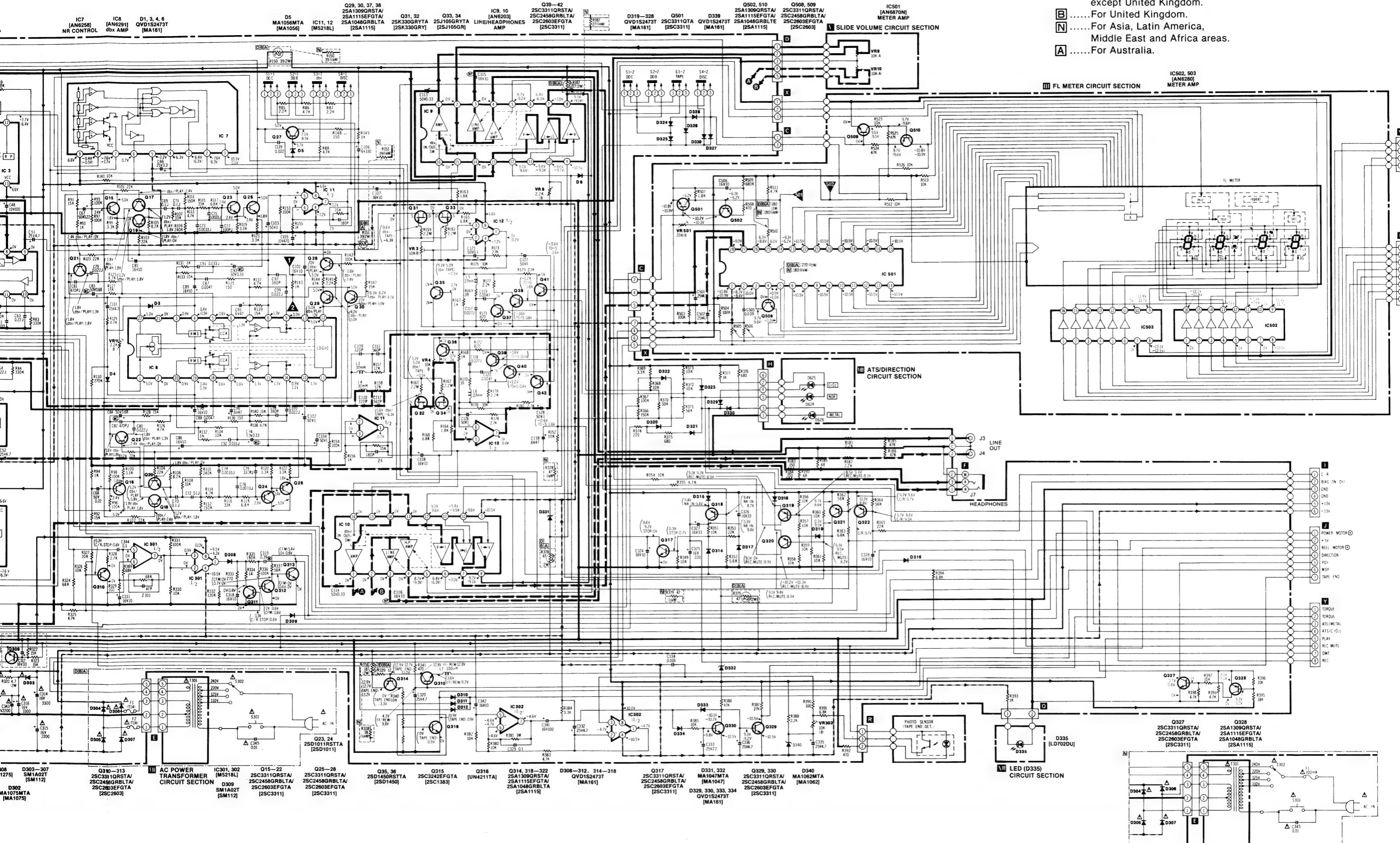
BLOCK DIAGRAM





SCHEMATIC DIAGRAM (for Main/FL Meter Section)





NOTES:

- [D]For all European areas except United Kingdom.
- [B]For United Kingdom.
- [N]For Asia, Latin America, Middle East and Africa areas.
- [A]For Australia.

- S1-1, S2-1..... Dolby-C IN/OUT switch (shown in OUT position).
- S2-1, S2-2..... Dolby-B IN/OUT switch (shown in OUT position).
- S3-1, S3-2..... dbx "Tape" IN/OUT switch (shown in OUT position).
- S4-1, S4-2..... dbx "Disc" IN/OUT switch (shown in OUT position).
- S301..... Power ON/OFF switch (shown in OFF position).
- S302..... AC power voltage select switch.
- S401..... Timer REC/PLAY switch (shown in Timer REC position).
- S402-1, S402-3..... Mode select switch (□ / □).
- S501..... Direction switch (shown in OFF position).
- Record switch (shown in OFF position)
- S502..... F/F switch (shown in OFF position).
- S504..... Rewind switch (shown in OFF position).
- S505..... Play switch (shown in OFF position).
- S506..... Pause switch (shown in OFF position).
- S507..... Stop switch (shown in OFF position).
- S508..... Auto-Rec mute switch (shown in OFF position).
- S509..... Counter Reset switch (shown in OFF position).
- S510..... Tape counter switch (shown in OFF position).
- S511..... Time counter switch (shown in OFF position).
- S512..... D.M.S. [1] switch (shown in OFF position).
- S513..... D.M.S. [2] switch (shown in OFF position).
- S514..... D.M.S. [3] switch (shown in OFF position).
- S515..... D.M.S. [4] switch (shown in OFF position).
- S516..... D.M.S. [5] switch (shown in OFF position).
- S517..... D.M.S. [6] switch (shown in OFF position).
- S518..... D.M.S. [7] switch (shown in OFF position).
- S519..... D.M.S. [8] switch (shown in OFF position).
- S520..... D.M.S. [9] switch (shown in OFF position).
- S521..... D.M.S. [10] switch (shown in OFF position).
- S522..... D.M.S. [11] switch (shown in OFF position).
- S523..... D.M.S. [12] switch (shown in OFF position).
- S524..... Blank Skip switch (shown in OFF position).
- S525..... Repeat switch (shown in OFF position).
- S526..... D.M.S. FWD/REV switch.
- S601..... Auto tape select switch (for Metal tape).
- S602..... Auto tape select switch (for CrO₂ tape).
- S603..... Cassette half switch (shown in OFF position).
- S604..... FWD Rec inhibit switch (shown in OFF position).
- S605..... REV Rec inhibit switch (shown in OFF position).
- S606..... FWD/REV changing switch (shown in OFF position).
- S607..... Mode changing switch (shown in OFF position).
- S608..... FWD/REV detection switch (shown in FWD position).
- VR1.2..... Playback gain adjustment VR.
- VR3.4..... Overall gain adjustment VR.
- VR5.6..... Input level controls.
- VR7..... Balance control.
- VR8..... FL meter adjustment VR (-40dB indication).
- VR9.10..... Output level controls.
- VR11..... Attack recovery time adjustment VR.
- VR301, 302..... Bias current adjustment VR.
- VR303..... Photo sensor sensitivity adjustment VR.
- VR305, 306..... Erase current adjustment VR.
- VR501..... FL meter adjustment VR (0dB indication).
- VR601..... Takeup torque adjustment VR.
- L1, L2..... Skewing Network.
- L3, L4..... Bias Trap Coil.
- L5, L6..... Peaking Coil.
- L7..... Check Coil.
- L301, L302..... Bias Oscillation Coil.
- L401..... Choke Coil.
- L601-L604..... Choke Coil.
- MPX1, 2..... Multiplex Filter.
- Resistance are in ohms (Ω). 1/4 watt unless specified otherwise.
1K = 1.000(Ω), 1M = 1.000K(Ω).
- Capacity are in micro-farads (μF) unless specified otherwise.
- The mark (▼) shows test point. e.g. ▼ = Test point 1.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.

- (—)..... Voltage values at record mode.
- dbx/PLAY..... Voltage values at dbx encode mode.
- dbx/TAPE..... Voltage values at dbx encode or decode mode.
- CrO₂..... Voltage values at CrO₂ tape mode.
- Metal..... Voltage values at Metal tape mode.
- Stop..... Voltage values at Stop mode.
- C/R..... Voltage values at CUE/REV mode.
- FF/REW..... Voltage values at FF/REW mode.
- REC MUTE..... Voltage values at AUTO REC MUTE mode.
- 70μs..... Voltage values at CrO₂ or Metal tape mode.
- NR IN..... Voltage value at which the noise reduction switch is turned on.
- CFM..... Voltage value at which the test tape QZZCFM (315Hz/0dB) is played.
- TAPE END..... Voltage at the end of the cassette tape.
- For measurement use VTVM.
- (—) indicates B + (bias).
- (—) indicates B - (bias).
- (—) indicates the flow of the playback signal. (NR out).
- (—) indicates the flow of the recording signal. (NR out).

- Important safety notice
Components identified by △ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- Described in the schematic diagram are two types of numbers; the supply parts numbers and production parts number for transistors and diodes. One type of number is used for supply parts number and production parts number when they are identical.

e.g. Q1
 2SC1844(E,F) — Production parts number
 [2SC1844E] — Supply parts number

D212
 1S2473T77 — Production parts number
 [MA161] — Supply parts numbers

The supply parts number is described alone in the replacement parts list.

This schematic diagram may be modified at any time
with the development of new technology.

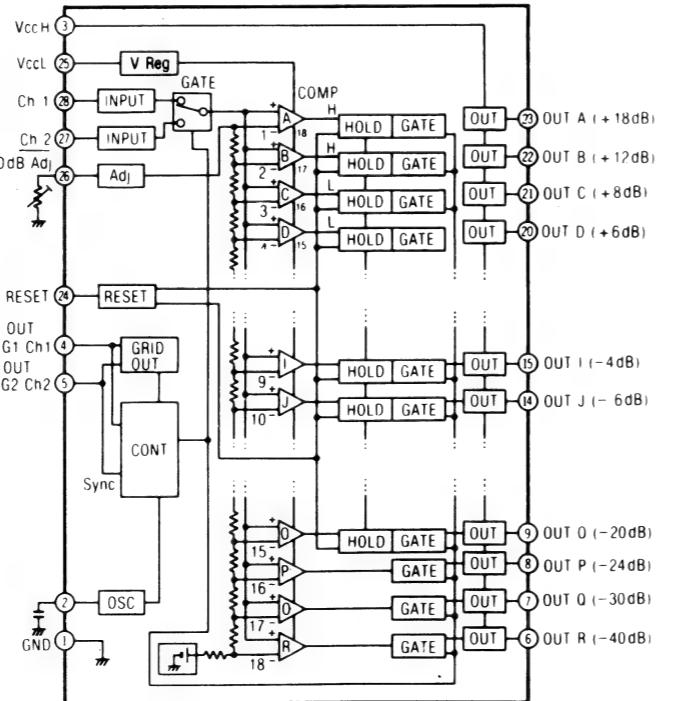
SPECIFICATIONS

- * Output level control...MAX
- * Input level control ...MAX
- * Balance controlCenter

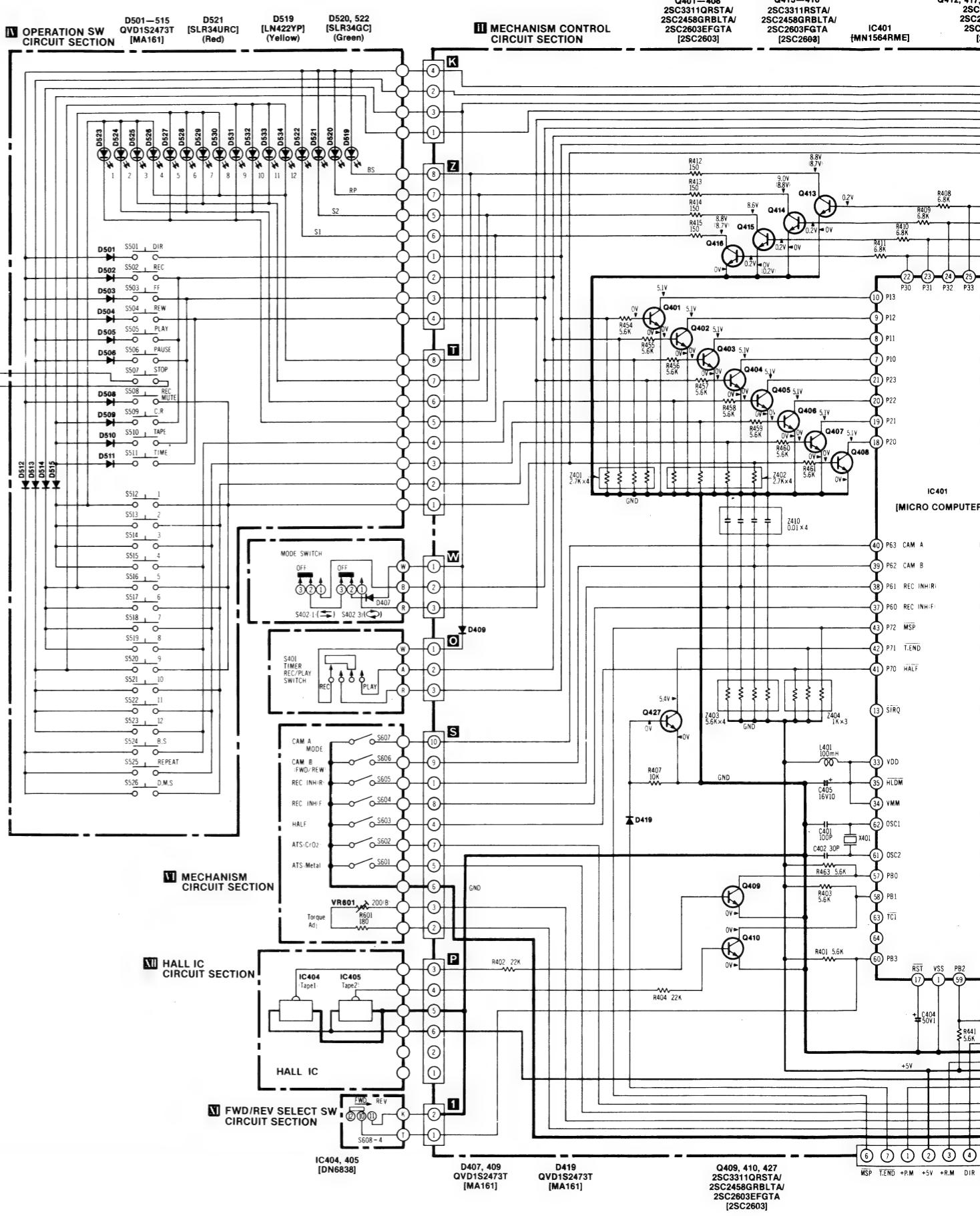
Playback S/N ratio * Test tape...QZZCFM	Greater than 45dB
Overall distortion * Test tape ...QZZCRA for Normal ...QZZCRX for CrO ₂ ...QZZCRZ for Metal	Less than 4%
Overall S/N ratio * Test tape...QZZCRA	Greater than 43dB (without NAB filter)

EQUIVALENT CIRCUIT

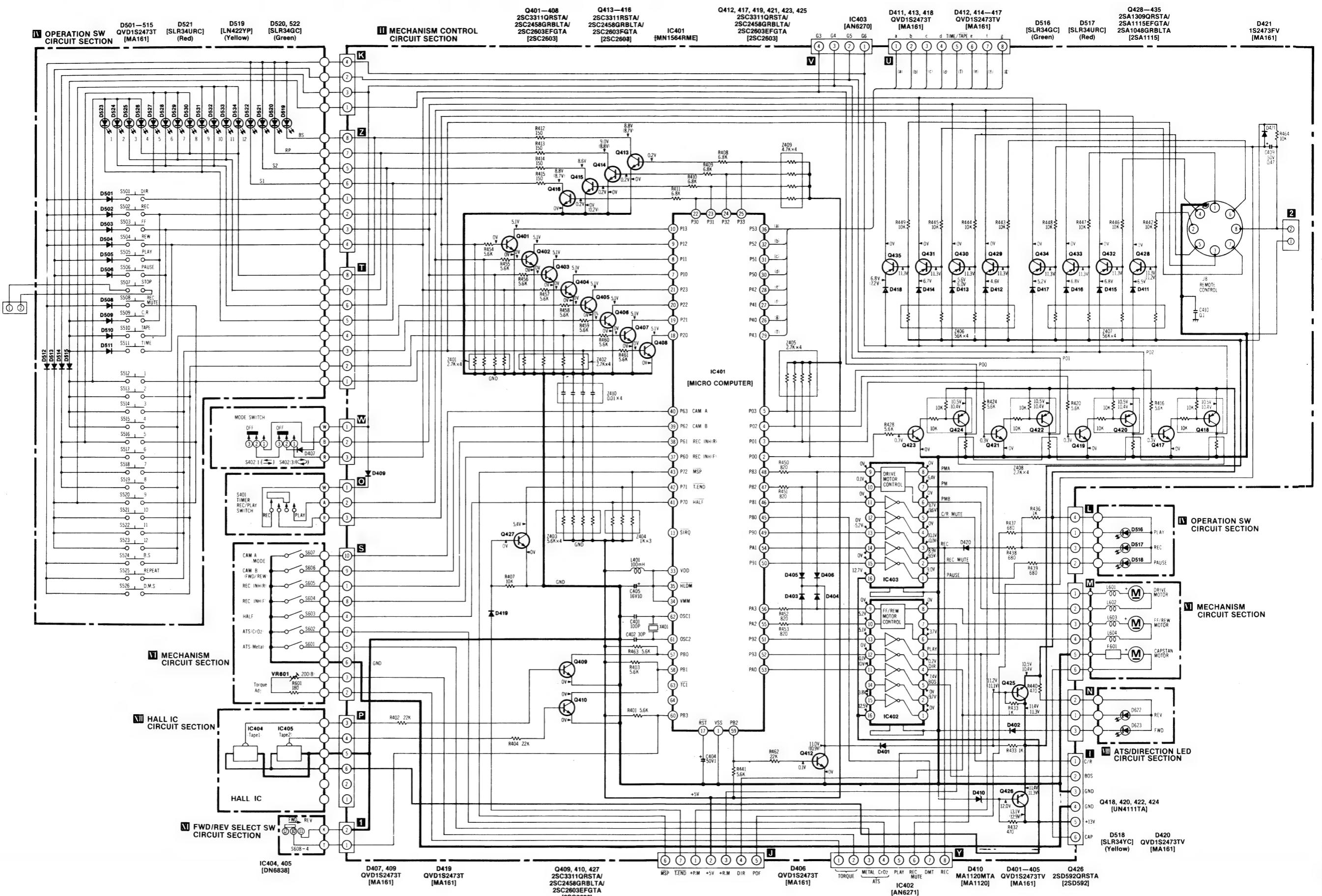
IC501: AN6870N



SCHEMATIC DIAGRAM (for Mechanism/Mechanism Control Section)



SCHEMATIC DIAGRAM (for Mechanism/Mechanism Control Section)



ELECTRICAL PARTS LIST

NOTES:

RESISTORS

ERD.....Carbon	ECBACeramic
ERGMetal-oxide	ECG□Ceramic
ERS.....Metal-oxide	ECK□Ceramic
EROMetal-film	ECC□Ceramic
ERX.....Metal-film	ECF□Ceramic
ERQFuse type metallic	ECQMPolyester film
ERC.....Solid	ECQEPolyester film
ERF.....Cement	ECOFPolypropylene
	ECEOElectrolytic
	ECEON ...Non polar electrolytic
	ECQSPolystyrene
	ECSDTantalum
	QCSTantalum

REPLACEMENT PARTS LIST

Important safety notice
Components identified by Δ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Ref. No.	Part No.	Part Name & Description
CONNECTORS		
CN 1	QJT1090	Check Pin
CN 2	QJT1054	Contact
CN 3	QJS1920TN	2 Pin Socket
CN 4	QJP1920TN	2 Pin Plug
CN 5	QJS1921TN	3 Pin Socket
CN 6	QJP1921TN	3 Pin Plug
CN 7	QJS1922TN	6 Pin Socket
CN 8	QJP1922TN	6 Pin Plug
CN 9	QJS1987S	Jumper Socket (4 Pin)
CN 10	QJS1961S	Jumper Socket (5 Pin)
CN 11	QJS1993S	Jumper Socket (6 Pin)
CN 12	QJS1962S	Jumper Socket (7 Pin)
CN 13	QJS1983S	Jumper Socket (8 Pin)
CN 14	QJS1994S	Jumper Socket (6 Pin/Type-L)
CN 15	QJS2004S	Jumper Socket (10 Pin/Type-L)

Ref. No.	Part No.	Ref. No.	Part No.	
RESISTORS				
R 1, 2	ERD25TJ273	R 45, 46	ERD25TJ183	
R 3, 4	ERD25TJ394	R 47, 48	ERD25FJ181	
R 5, 6	ERD25FJ102	R 49, 50, 51, 52	ERD25FJ103	
R 7, 8	ERD25TJ273	R 53, 54	ERD25FJ101	
R 9, 10	ERD25FJ102	R 55, 56	ERD25FJ512	
R 11, 12	ERD25FJ472	R 57, 58	ERD25FJ102	
R 13, 14	ERD25TJ224	R 59, 60	ERD25TJ224	
R 15, 16	ERD25FJ100	R 61, 62	ERD25TJ683	
R 17, 18	ERD25FJ472	R 63, 64	ERD25FJ512	
R 19	ERD25FJ561	R 65, 66	ERD25FJ222	
R 20	ERD25TJ223	R 67, 68	ERD25FJ823	
R 21, 22	ERD25TJ563	R 69, 70	ERD25FJ472	
R 23, 24	ERD25FJ101	R 71, 72	ERD25TJ123	
R 25, 26	ERD25FJ102	R 73, 74	ERD25TJ473	
R 27, 28	ERD25FJ181	R 75, 76	ERD25TJ753	
R 29, 30	ERD25TJ334	R 77, 78	ERD25TJ334	
R 31, 32	ERD25FJ682	R 79, 80, 81, 82	ERD25TJ394	
R 33, 34	ERD25FJ562			
R 35, 36	ERD25TJ225	R 83, 84	ERD25TJ334	
R 37, 38	ERD25TJ104	R 85	ERD25FJ222	
R 39, 40	ERD25FJ103	R 86	ERD25FJ472	
R 41, 42	ERD25FJ472	R 87	ERD25FJ222	
R 43, 44	ERD25FJ272	R 88	ERD25FJ472	
	R 91, 92	ERD25TJ153	R 310	ERD25FJ332

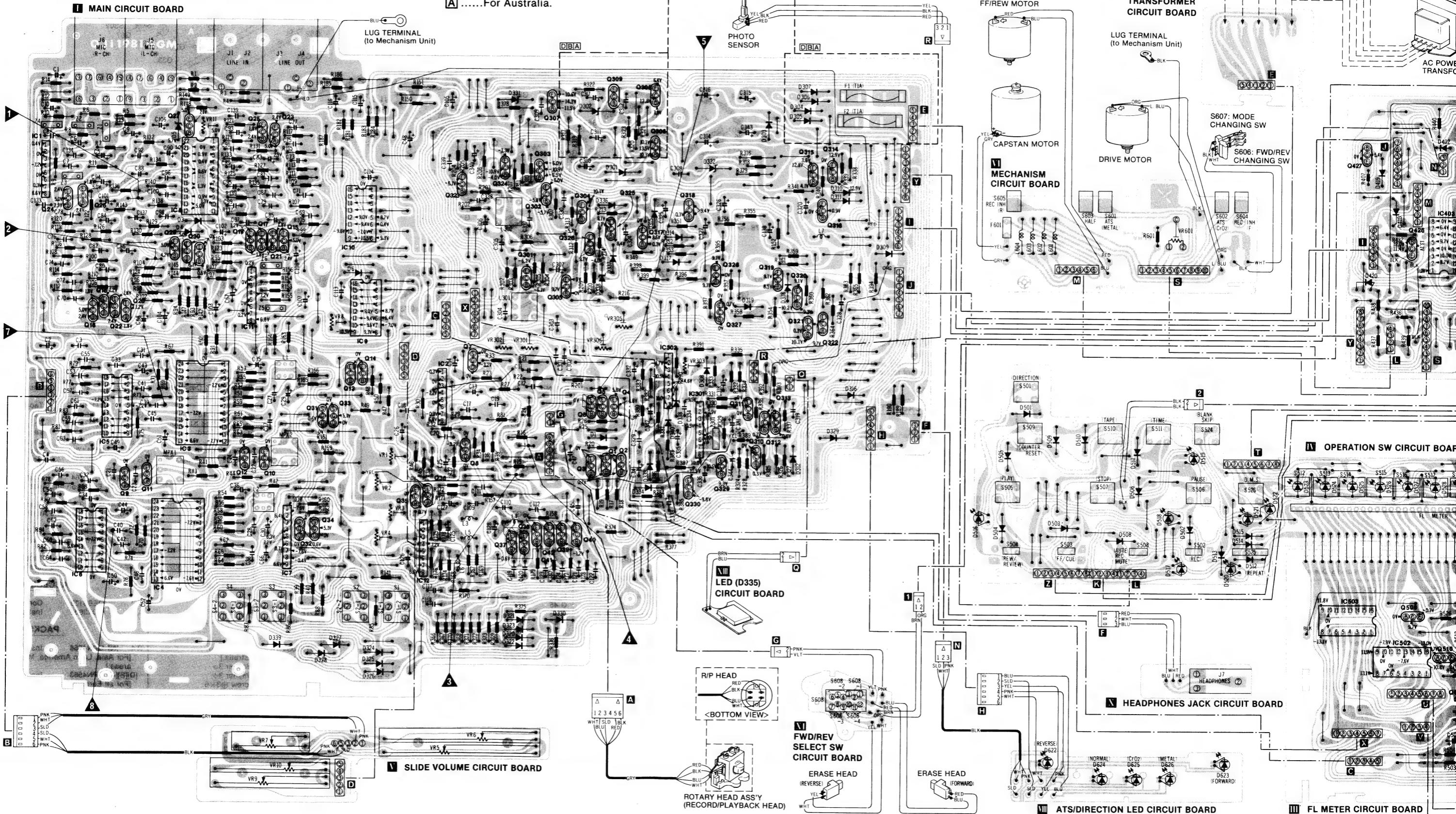
Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.
CAPACITORS																			
R 45, 46	ERD25TJ183	R 47, 48	ERD25FJ181	R 49, 50, 51, 52	ERD25FJ103	R 53, 54	ERD25FJ101	R 55, 56	ERD25FJ512	R 57, 58	ERD25FJ102	R 59, 60	ERD25TJ224	R 61, 62	ERD25TJ683	R 63, 64	ERD25FJ512	R 65, 66	ERD25FJ222
R 101, 102, 103, 104	ERD25TJ223	R 105, 106	ERD25FJ822	R 107, 108	ERD25TJ333	R 109, 110	ERD25TJ244	R 111, 112	ERD25TJ514	R 113, 114	ERD25FJ472	R 115, 116	ERD25TJ333	R 117, 118	ERD25FJ682	R 119, 120, 121, 122	ERD25FJ102	R 123, 124	ERD25TJ223
R 125, 126	ERD25FJ472	R 127, 128	ERD25TJ153	R 129	ERD25FJ472	R 130	ERD25TJ274	R 131, 132	ERD25FJ102	R 133, 134	ERD25FJ103	R 135, 136	ERD25FJ151	R 137, 138	ERD25FJ472	R 139, 140	ERD25TJ513	R 141	ERD25FJ103
R 142	ERD25TJ104	R 143	ERD25FJ102	R 144	ERD25FJ473	R 145	ERD25FJ222	R 147	ERD25TJ153	R 148	ERD25FJ151	R 149	ERD25FJ102	R 150, 151	[N] ERD25FJ390	R 152	ERD25FJ103	R 153, 154	ERD25TJ104
R 155, 156	ERD25FJ102	R 157, 158	ERD25TJ123	R 159, 160, 161, 162	ERD25TJ225	R 163, 164	ERD25FJ182	R 165, 166	ERD25FJ682	R 167, 168	ERD25FJ102	R 169, 170	ERD25FJ390	R 171, 172	ERD25FJ821	R 173, 174	ERD25FJ272	R 175, 176	ERD25FJ103
R 177, 178	ERD25FJ222	R 179, 180	ERD25FJ272	R 181, 182	ERD25FJ821	R 183, 184	ERD25FJ101	R 185, 186	ERD25TJ473	R 187	[N] ERD25FJ270	R 189, 190	ERD25FJ680	R 191, 192	QVNBA300B223	R 193, 194	QVNBA300B103	R 195, 196	ERD25FJ103
R 197, 198	ERD25TJ103	R 199, 200	ERD25FJ103	R 201, 202	ERD25FJ100	R 203, 204	ERD25FJ562	R 205	[N] ERD25FJ100	R 206	[N] ERD25FJ100	R 207	ERD25FJ332	R 208	ERD25FJ103	R 209, 210	ERD25FJ222	R 211, 212	ERD25FJ473
R 213, 214	ERD25TJ473	R 215	ERD25FJ103	R 216	ERD25FJ222	R 217, 218	ERD25FJ103	R 219, 220	ERD25FJ103	R 221, 222	ERD25FJ683	R 223	ERD25FJ103	R 224	ERD25FJ103	R 225, 226	ERD25FJ103	R 227, 228	ERD25FJ103
R 229, 230	ERD25FJ332	R 231, 232	ERD25FJ103	R 233, 234	ERD25FJ103	R 235, 236	ERD25FJ103	R 237, 238	ERD25FJ103	R 239, 240	ERD25FJ683	R 241, 242	ERD25FJ103	R 243, 244	ERD25FJ103	R 245, 246	ERD25FJ103	R 247, 248	ERD25FJ103
R 249, 250	ERD25FJ103	R 251, 252	ERD25FJ103	R 253, 254	ERD25FJ103	R 255, 256	ERD25FJ103	R 257, 258	ERD25FJ103	R 259, 260	ERD25FJ683	R 261	ERD25FJ103	R 262, 263	ERD25FJ103	R 264, 265	ERD25FJ103	R 266, 267	ERD25FJ103
R 268, 269	ERD25FJ103	R 270, 271	ERD25FJ103	R 272, 273	ERD25FJ103	R 274, 275	ERD25FJ103	R 276, 277	ERD25FJ103	R 278, 279	ERD25FJ683	R 280	ERD25FJ103	R 281, 282	ERD25FJ103	R 283, 284	ERD25FJ103	R 285, 286	ERD25FJ103
R 287, 288	ERD25FJ103	R 289, 290	ERD25FJ103	R 291, 292	ERD25FJ103	R 293, 294	ERD25FJ103	R 295, 296	ERD25FJ103	R 297, 298	ERD25FJ683	R 299	ERD25FJ103	R 300, 301	ERD25FJ103	R 302, 303	ERD25FJ103	R 304, 305	ERD25FJ103
R 306	[N] ERD25FJ100	R 307	ERD25FJ222	R 308	ERD25FJ103	R 309	ERD25FJ103	R 310	ERD25FJ103	R 311	ERD25FJ103	R 312	ERD25FJ103	R 313	ERD25FJ103	R 314	ERD25FJ103	R 315	ERD25FJ103
R 316	ERD25FJ103	R 317	ERD25FJ103	R 318	ERD25FJ103	R 319	ERD25FJ103	R 320	ERD25FJ103	R 321	ERD25FJ103	R 322	ERD25FJ103	R 323	ERD25FJ103	R 324	ERD25FJ103	R 325	ERD25FJ103
R 326																			

Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.
ERD25TJ103 410, 411	C 61, 62	ECQM1H333JZ	Z 3, 4	EXRP220K124	D 331, 332	MA1047	D 622, 623, 624, 625, 626	QVQLS0050
ERD25FJ682 414, 415	C 63, 64	ECQM1H224JZ	Z 5, 6	EXRP181K153	D 333, 334	MA161	(With ATS/Direction Circuit Board)	
ERD25FJ151 C 66	C 65	ECQM1H822JZ	Z 301	EXRP470K683	D 335	LD702DU		
ERD25FJ562 C 67, 68	C 69, 70, 71, 72	ECEA1EN3R3	Z 401, 402	EXBEQ4272K	D 336, 337	MA161		
ERD25FJ562 C 73, 74, 75, 76	ECQM1H104JZ	Z 403	EXBEQ4562K	D 338	MA1056			
ERD25FJ562 C 77, 78	ECQM1H332JZ	Z 404	EXBEQ4102K	D 339	MA161			
ERD25FJ562 C 79, 80	ECQM1H223JZ	Z 405	EXBEQ4272K	D 340	MA1062			
ERD25FJ471 439	C 81, 82	ECCD1H471K	Z 406, 407	EXBEQ4563K	D 401, 402, 403, 404, 405, 406,	MA161		
ERD25FJ681 444, 445, 446, 447, 452, 453	C 83, 84	ECQM1H223JZ	Z 408	EXFP4103ZW	D 407	MA161		
ERD25TJ103 C 85, 86	ECEA1CS100	Q 1, 2, 3	2SD1011	D 409	MA161			
ERD25FJ821 C 87, 88	ECQM1H472JZ	Q 4	2SB1036	D 410	MA1120			
ERD25FJ562 C 89, 90	ECEA16Z10	Q 5, 6	2SD1450	D 411, 412, 413, 414, 415, 416,	MA161			
ERD25FJ562 C 91, 92	ECQM1H332JZ	Q 7, 8	2SK330GRY	D 414, 415, 416, 417, 418, 419, 420, 421	MA161			
ERD25FJ562 C 93, 94	ECEA50MR33R	Q 9, 10, 11, 12	2SD1450	D 417, 418, 419, 420, 421	MA161			
ERD25TJ223 C 95, 96	ECEA0JS470	Q 13, 14, 15, 16, 17, 18, 19, 20,	2SD1450	D 419, 420, 421	MA161			
ERD25FJ562 C 97, 98	ECCD1H391J	Q 21, 22	2SC3311	D 420, 421	MA161			
ERD25FJ103 C 99, 100	ECQM1H223JZ	Q 23, 24	2SD1011	D 421, 422	MA161			
ERD25TJ104 C 101	ECEA1CS100	Q 25, 26, 27, 28	2SD1011	D 422, 423	MA161			
ERD25TJ181 a, Latin America, East and Africa	ECEA50Z1	Q 29, 30	2SC3311	D 423, 424	MA161			
ERG12ANJ271 European and a.)	C 105	ECEA1AS471	Q 31, 32	2SA1115	D 424, 425	MA161		
ERD25FJ182 C 106	ECEA0JS331	2SK330GRY	refer to S512—S523	D 425, 426	MA161			
ERD25FJ471 C 107, 108	ECEA1CS100	Q 33, 34	2SJ105GR	D 426, 427	MA161			
ERD25TJ684 C 109, 110	ECKD2H121KB	Q 35, 36	2SD1450	D 427, 428	MA161			
ERD25TJ181 a, Latin America, East and Africa	C 111, 112	ECKD1H561KB	Q 37, 38	2SA1115	D 428, 429	MA161		
E RESISTORS C 113, 114	ECEA50Z33	2SC3311	Q 39, 40, 41, 42	2SC3311	D 429, 430	MA161		
ERG1ANJ181 European and a.)	C 115, 116	ECEA1CN100	Q 301, 302	2SD592	D 430, 431	MA161		
ERD25FJ472 C 117, 118	ECQM1H273JZ	Q 303	2SA719	D 431, 432	MA161			
ERD25TJ181 C 119, 120	ECFDD472KVY	Q 304	2SA1115	D 432, 433	MA161			
ERD25TJ181 C 125, 126, 127, 128	ECEA50Z1	Q 305	UN4211TA	D 433, 434	MA161			
E CAPACITORS C 128, 129	△ ECKD1H223ZF	Q 306	2SD1265OP	D 434, 435	MA161			
EVN4KAAB0B22 C 130, 131	ECEA1CS331	Q 307	2SB941P	D 435, 436	MA161			
ACITORS C 133, 134	ECFDD223KXY	Q 308	2SD1275	D 436, 437	MA161			
ECEA1ES4R7 C 137	ECEA1ES4R7	Q 309	[D][B][A] 2SC3311, [For all European and Australia.]	D 437, 438	MA161			
ERD25FJ472 C 138	ECEA0JS470	Q 310	2SC3311, [For all European and Australia.]	D 438, 439	MA161			
ERD25FJ103 C 139	ECKD1H223ZF	Q 311	2SC3311, [For all European and Australia.]	D 439, 440	MA161			
ERD25TJ473 C 140	ECEA1ES4R7	Q 312	2SC3311, [For all European and Australia.]	D 440, 441	MA161			
ERD25FJ103 C 141	ECFDD153KXY	Q 313	2SC3311, [For all European and Australia.]	D 441, 442	MA161			
ERD25TJ181 C 142	ECEA1ES220	Q 314	2SA1115	D 442, 443	MA161			
E RESISTORS C 143, 144	△ ECKD1H223ZF	Q 315	2SC1383	D 443, 444	MA161			
EVN4KAAB0B22 C 145, 146	ECEA1ES220	Q 316	UN4211TA	D 444, 445	MA161			
EVN4KAAB0B22 C 147, 148	ECEA1ES220	Q 317	2SC3311	D 445, 446	MA161			
EVN4KAAB0B22 C 149, 150	ECEA1ES220	Q 318, 319, 320, 322	2SC3311	D 446, 447	MA161			
EVN4KAAB0B22 C 151, 152	ECEA1ES220	Q 321	2SA1115	D 447, 448	MA161			
EVN4KAAB0B22 C 153, 154	ECEA1ES220	Q 322	2SD592	D 448, 449	MA161			
EVN4KAAB0B22 C 155, 156	ECEA1ES220	Q 323	2SA719	D 449, 450	MA161			
EVN4KAAB0B22 C 157, 158	[D][B][A] ECEA1CS330	Q 324	2SC3311	D 450, 451	MA161			
EVN4KAAB0B22 C 159, 160	[A][N] △ QLPA76ELX	Q 325, 326	2SA1115	D 451, 452	MA161			
EVN4KAAB0B22 C 161, 162	AC Power Transformer [For all European and Australia.]	Q 327	2SC3311	D 452, 453	MA161			
EVN4KAAB0B22 C 163, 164	[A][N] △ QLPA88ELX	Q 328	2SA1115	D 453, 454	MA161			
EVN4KAAB0B22 C 165, 166	AC Power Transformer [For Australia, Asia, Latin America, Middle East and Africa areas.]	Q 329, 330	2SC3311	D 454, 455	MA161			
EVN4KAAB0B22 C 167, 168	ECEA1CS100	Q 331	2SC3311	D 455, 456	MA161			
EVN4KAAB0B22 C 169, 170	ECQM1H394JZ	Q 332	2SC3311	D 456, 457	MA161			
EVN4KAAB0B22 C 171, 172	ECEA1ES4R7	Q 333	2SC3311	D 457, 458	MA161			
EVN4KAAB0B22 C 173, 174	ECEA1ES4R7	Q 334	2SC3311	D 458, 459	MA161			
EVN4KAAB0B22 C 175, 176	ECEA1ES4R7	Q 335	ECQM1H102JZ	D 459, 460	MA161			
EVN4KAAB0B22 C 177, 178	ECEA0JS101	Q 336	ECEA1ES4R7	D 460, 461	MA161			
EVN4KAAB0B22 C 179, 180	ECEA1ES4R7	Q 337	ECOP133JZ	D 461, 462	MA161			
EVN4KAAB0B22 C 181, 182	ECFDD153KXY	Q 338	ECFDD153KXY	D 462, 463	MA161			
EVN4KAAB0B22 C 183, 184	ECEA1ES4R7	Q 339	ECFDD822KVY	D 463, 464	MA161			
EVN4KAAB0B22 C 185, 186	ECEA1ES4R7	Q 340	ECEA1ES101	D 464, 465	MA161			
EVN4KAAB0B22 C 187, 188	ECEA1ES4R7	Q 341	ECEA1CS101	D 465, 466	MA161			
EVN4KAAB0B22 C 189, 190	ECEA1ES4R7	Q 342	ECEA1CS100	D 466, 467	MA161			
EVN4KAAB0B22 C 191, 192	ECEA1ES4R7	Q 343	ECEA1CS222	D 467, 468	MA161			
EVN4KAAB0B22 C 193, 194	ECEA1ES4R7	Q 344	ECQV1H104JZ	D 468, 469	MA161			
EVN4KAAB0B22 C 195, 196	ECEA1ES4R7	Q 345	ECQU2A103MF	D 469, 470	MA161			
EVN4KAAB0B22 C 197, 198	DIODES & RECTIFIERS	D 1	MA161	J 1, 2, 3, 4	MA161			
EVN4KAAB0B22 C 199, 200	ECCD1H101KC	D 2	MA161	S 1, 2, 3, 4	Push Switch (NR Selector)			
EVN4KAAB0B22 C 201, 202	ECCD1H330KC	D 3	MA161	S 201 △ QSW127	Push Switch (Power ON/OFF)			
EVN4KAAB0B22 C 203, 204	ECEA1HS010	D 4	MA1056	S 302 △ QSR1407	Rotary Switch (AC Power Voltage Selector)			
EVN4KAAB0B22 C 205, 206	ECEA1CS100	D 5	MA161	S 401 QSS1306	Slide Switch (Timer REC/PLAY)			
EVN4KAAB0B22 C 207, 208	ECEA1HS047	D 6	MA161	S 402 QSW2241	Push Switch (Mode Selector)			
EVN4KAAB0B22 C 209, 210	ECEA1HS047	D 7	MA					

CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

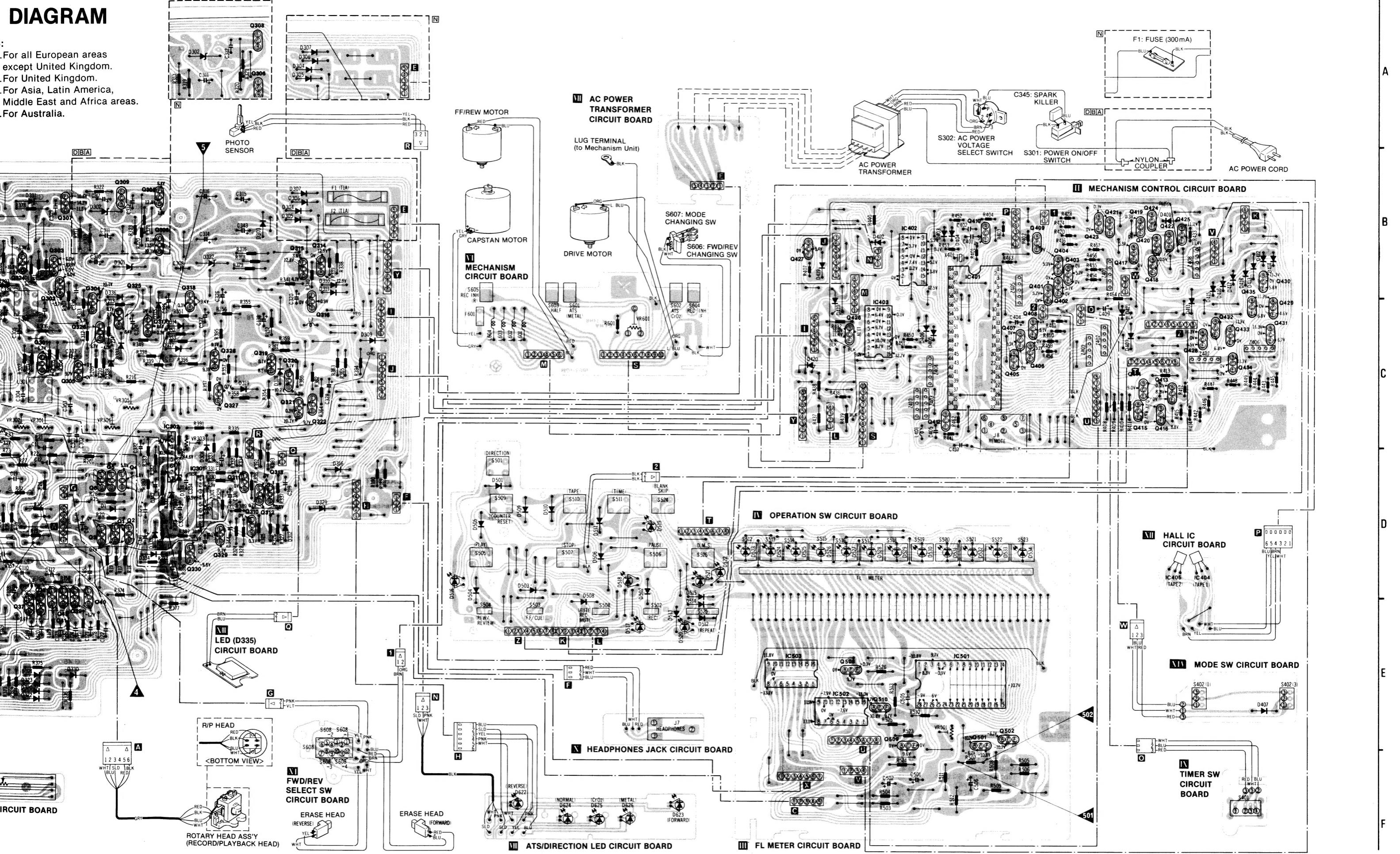
NOTES:

- D** For all European areas except United Kingdom.
- B** For United Kingdom.
- N** For Asia, Latin America, Middle East and Africa areas.
- A** For Australia.

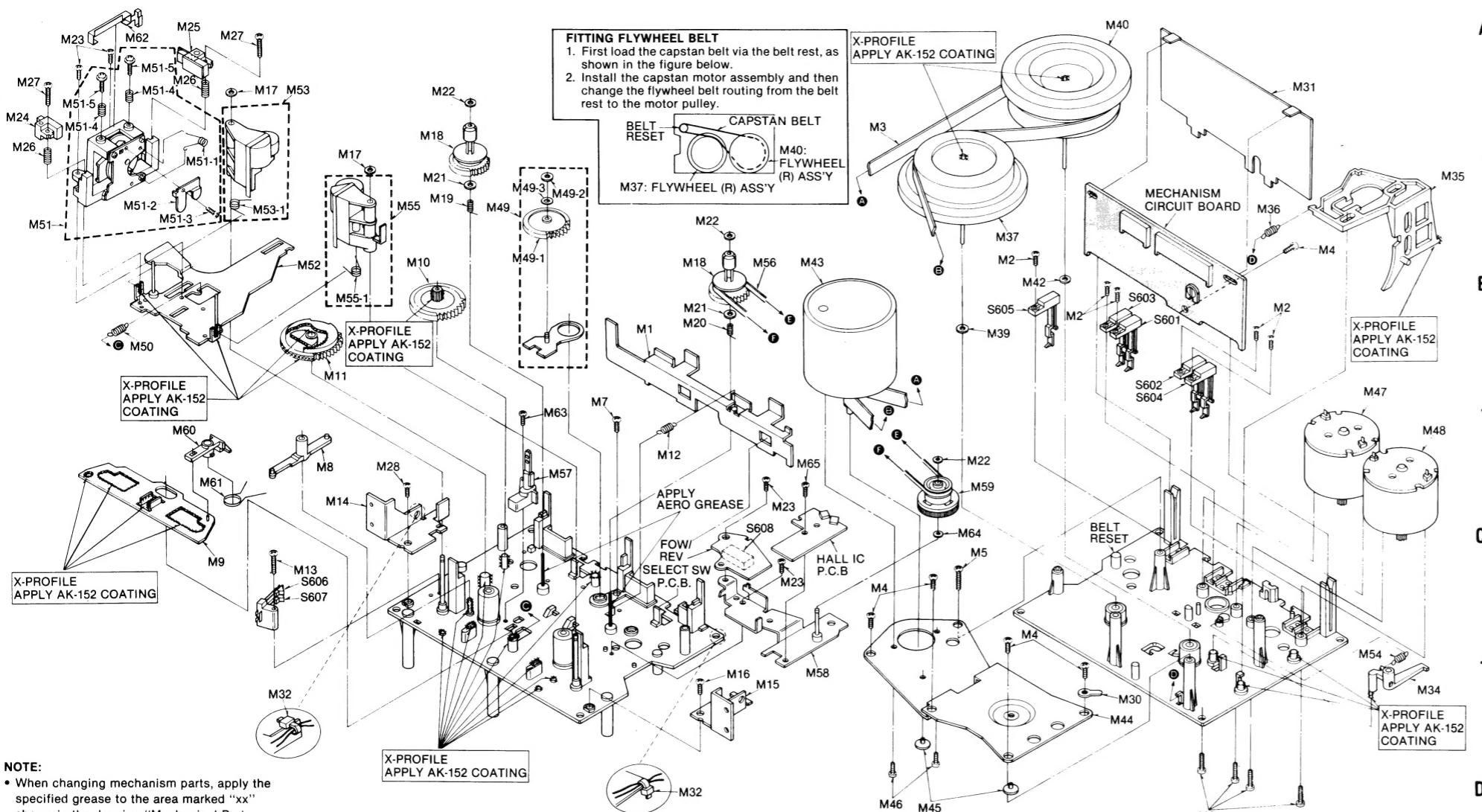


DIAGRAM

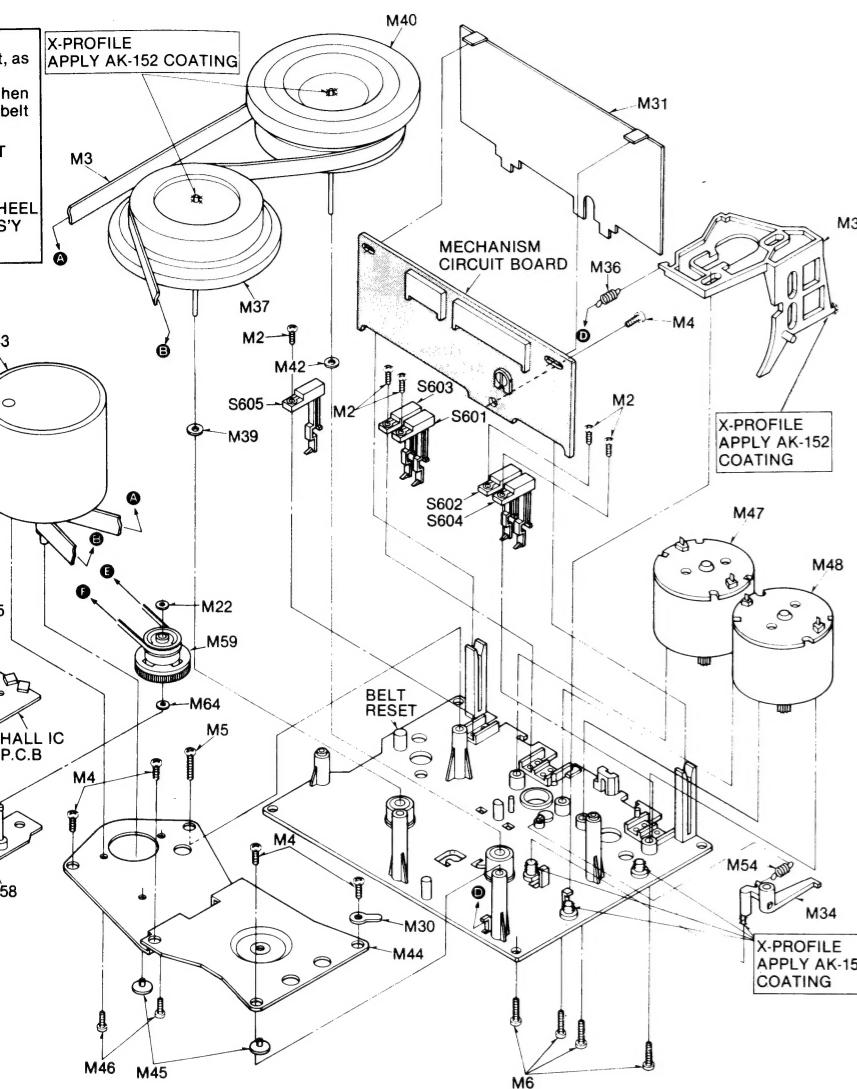
For all European areas
except United Kingdom.
For United Kingdom.
For Asia, Latin America,
Middle East and Africa areas.
For Australia.



MECHANICAL PARTS LOCATION



CABINET PARTS LOCATION



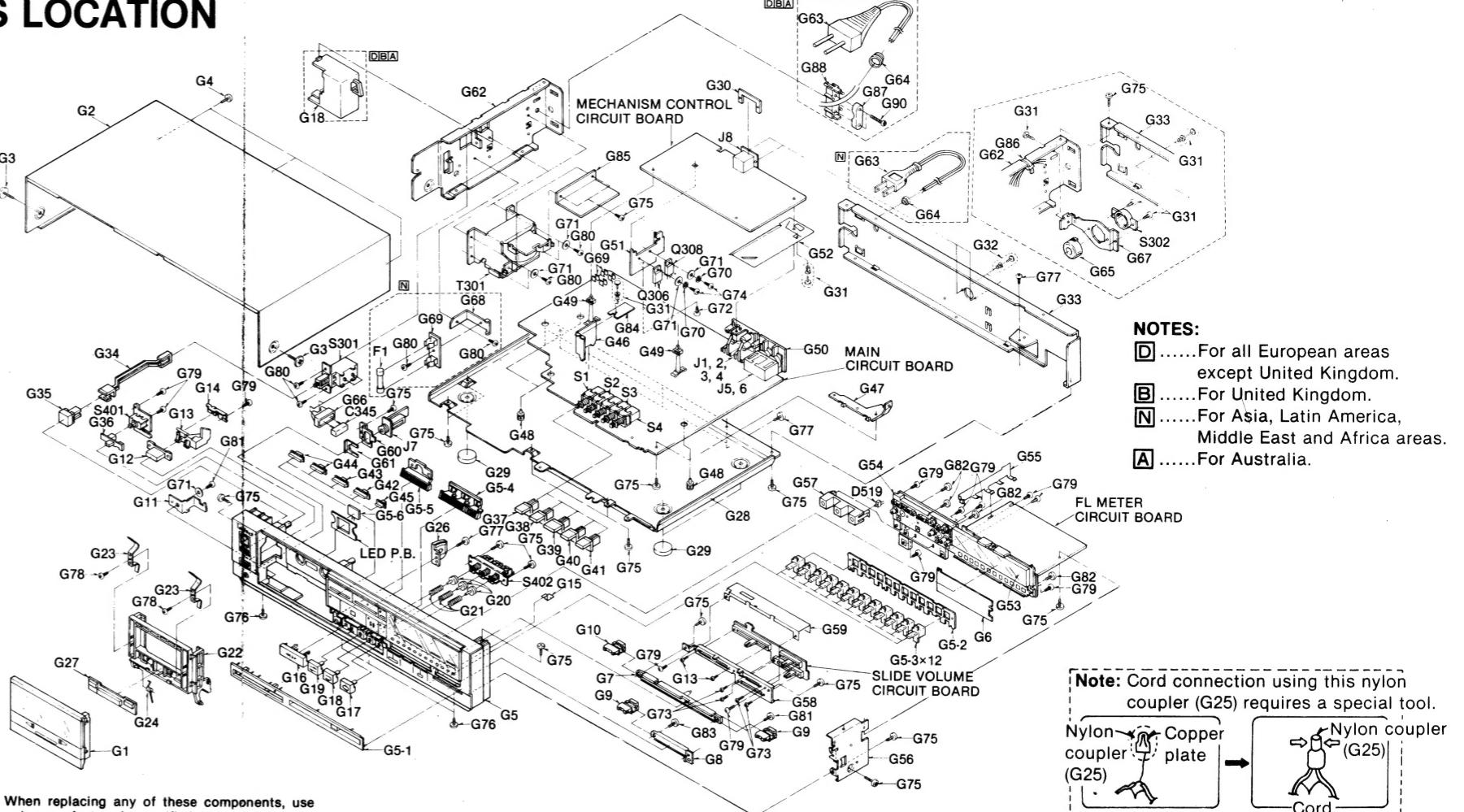
A

REPLACEMENT PARTS LIST

Important safety notice

Components identified by Δ mark have special characteristics important for safety.

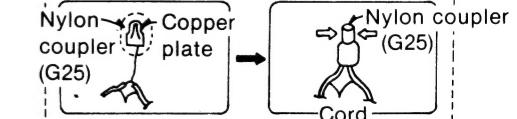
When replacing any of these components, use only manufacturer's specified parts.



NOTES:

- [D] For all European areas except United Kingdom.
- [B] For United Kingdom.
- [N] For Asia, Latin America, Middle East and Africa areas.
- [A] For Australia.

Note: Cord connection using this nylon coupler (G25) requires a special tool.



Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
QTD1315	Cord Clamper	M 51-1	QBN1994	Click Spring
QML4026	Obstruction Lever	M 51-2	QBP1993	Head Thrust Spring
QMR2097	Eject Rod	M 51-3	XTN2+4B	Tapping Screw $\oplus 2 \times 4$
QBT1947	Eject Rod Spring	M 51-4	QBC1470	Head Spring
QXF0221	Flywheel (R) Assembly	M 51-5	QHQ1352	Screw
QBW2116	Washer (2.4φ)	M 52	QXK2855	Head Base Plate Assembly
QXF0220	Flywheel (L) Assembly	M 53	QXL1654	Pinch Roller Arm (L) Assembly
QBW2117	Washer (2.7φ)	M 53-1	QBN1992	Pinch Roller Spring (L)
QXU0331	Capstan Motor Assembly (with Motor Governor P.C.B.)	M 54	QBT1962	Obstruction Lever Spring
QMA4619	Flywheel Holding Plate	M 55	QXL1655	Pinch Roller Arm (R) Assembly
QMZ1315	Flywheel Thrust Retainer	M 55-1	QBN1993	Pinch Roller Spring (R)
XSN26+3	Screw $\oplus 2.6 \times 3$	M 56	QDB0253	Pulley Belt
QXU0332	FF/REW Motor Assembly	M 57	QZE0063	End Sensor
QXU0333	Drive Motor Assembly	M 58	QXA1432	Magnet Pulley Angle
QXG1076	Center Gear Assembly	M 59	QXP0632	Magnet Pulley Assembly
QDG1307	Center Gear	M 60	QML4078	Switch Lever
QBW2007	Washer (2.5φ)	M 61	QBN2030	Switch Lever Spring
QBH0151	Spacer	M 62	QMH2107	Wire Clipper
QBT1742	Head Base Plate Spring	M 63	XTN26+8B	Tapping Screw $\oplus 2.6 \times 8$
QXV0195	Rotary Head Assembly (Record/Playback Head)	M 64	QBW2059	Poly Washer $\phi 2.1$
		M 65	XTN26+4B	Tapping Screw $\oplus 2.6 \times 4$

Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
QGC1245	Case Cover	G 1	[N] QYF0692	Cassette Lid
"Silver Type"		[For Asia, Latin America, Middle East and Africa areas.]	[N] QYF0692K	Cassette Lid
"Black Type"		[For Asia, Latin America, Middle East and Africa areas.]	[D][B][A] QYF0702	Cassette Lid
[D][B][A] QYF0702	Cassette Lid	[For all European and Australia.]	"Black Type"	
"Silver Type"		[For all European and Australia.]	[D][B][A] QYF0702K	Cassette Lid
[D][B][A] QYF0702K	Cassette Lid	[For all European areas.]	"Black Type"	
"Black Type"		[For all European areas.]	G 2	QGC1245
"Silver Type"			G 3	QHQ1349
"Black Type"			G 4	XTB3+8BFZ
"Silver Type"			G 5	QPK3467
"Black Type"			G 5-1	QYP1212
"Silver Type"			G 5-2	QMF2327
"Black Type"			G 5-3	QGO2344
"Silver Type"			G 5-4	QGO2308
"Black Type"			G 5-5	QGO2345
"Black Type"			G 5-6	refer to D335
"Silver Type"			G 6	QGL1190

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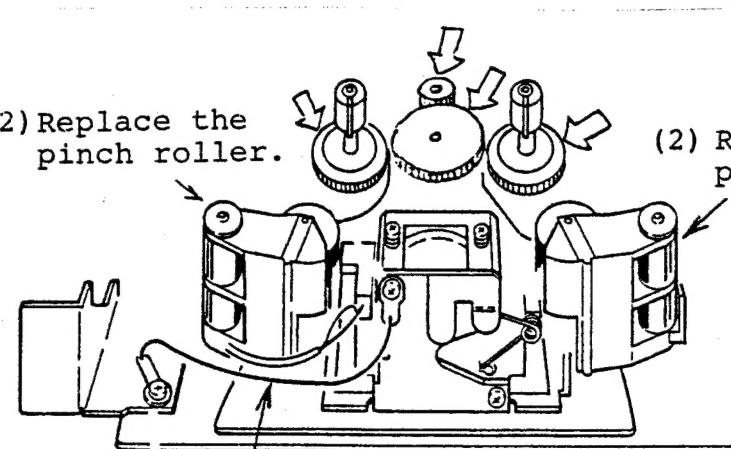
Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description																																																																				
CABINET PARTS																																																																																		
G 7	QGG0227	Meter Filter "Black Type"	G 27	refer to D622-626	ATS/Direction L.E.D.	G 63	[D] Δ SJA88	AC Power Cord	G 80	XTN3+6B	Tapping Screw $\oplus 3 \times 6$	G 81	XTN3+10B	Tapping Screw $\oplus 3 \times 10$																																																																				
G 8	QGG0229	Slide Guide-A "Silver Type"	G 28	QGC1247	Bottom Cover	G 29	[B] Δ QFC1205M	AC Power Cord	G 82	XTN3+12B	Tapping Screw $\oplus 3 \times 12$	G 30	QKA1094	Case Foot	G 83	XTN3+8B	Tapping Screw $\oplus 3 \times 8$																																																																	
G 9	QGG0229K	Slide Guide-B "Black Type"	G 30	QMA4645	Remote Control Angle	G 31	[N] Δ QKJ0609	Nylon Rivet-A	G 84	QTS1636	Shield Plate-C	G 32	QJK0661	Nylon Rivet-B	G 85	QMA4789	Transformer Angle																																																																	
G 10	QYT0657	Slide Knob-A Assembly (Output/Balance)	G 33	OMK2130	Back Chassis	G 34	QMR2059	Power Switch Rod	G 86	QTD1315	Cord Clammer	G 35	QGO2142	Push Button (Power ON/OFF)	G 87	[D][B][A] QTD1164	Cord Clammer-A																																																																	
G 11	QMA4626	Holder Angle-L	G 36	QGT1642	Timer Switch Knob	G 12	QGO2306	Eject Button	G 88	[For all European and Australia.]	[For all European and Australia.]	G 13	QGO2310	NR Button-A ("C")	G 89	[D][B][A] QTD1322	Cord Clammer-B																																																																	
G 13	QML4063	Eject Lever	G 37	QGO2311	NR Button-B ("B")	G 14	QPB2007	Eject Lever Spring	G 90	[For Asia, Latin America, Middle East and Africa areas.]	[For Asia, Latin America, Middle East and Africa areas.]	G 38	QGO2311	NR Button-C ("OUT")	G 91	[D][B][A] QJB1425	Cord Bushing																																																																	
G 14	QPB2007		G 39	QGO2312	NR Button-D ("TAPE")	G 40	QGO2313		G 92	[For all European and Australia.]	[For all European and Australia.]	G 41	QGO2314	NR Button-E ("DISC")	G 93	QMA3418	Fuse Angle																																																																	
G 15	QJC0064	Earth Plate	G 42	QGO2310R	REC Button (Red)	G 43	QGO2307D	Auto Rec Mute Button (Yellow)	G 94	QTWMM0026	Switch Cover (for S302)	G 44	QGO2307H	F.F/REW Button (Gray)	G 95	QTF1056	Fuse Holder																																																																	
G 16	QGO2309	Direction Button	G 45	QGO2346	Repeat Button (Gray)	G 46	QTS1635	Shield Plate	G 96	[N] QPNA564	Inside Carton	G 47	QGO2346K	P.B Holding Angle-A	G 97	A 1	QEB0125	Connection Cord																																																																
G 17	QGO2309K	Direction Button	G 48	QMA4613	Tapping Support	G 49	QKJ0725	Locking Support	G 98	[D][B][A] QQT3601	Instruction Book	G 50	QGK3355	Mic Cover	G 99	A 2	QQT3601	Instruction Book																																																																
G 18	QGO2315	Mode Select Button-A	G 51	QTH1184	Heat Sink	G 52	QTS1629	Shield Plate-B (for Mechanism Control P.B.)	G 100	ACCESSORIES																																																																								
G 19	QGO2315K	Mode Select Button-A	G 53	QSIFM008F	FL Meter	G 54	QMK2100	Operation Chassis	G 101	P 1	[N] QPN4564	Inside Carton	G 55	QMA4741	P.B Holding Angle	G 102	[D][B][A] OPN4563	Inside Carton																																																																
G 20	QMB1429	Button Bushing	G 56	QMA4740	Side Angle-R	G 57	QKJ0683	LED Holder	G 103	P 2	[For all European and Australia.]	[For Asia, Latin America, Middle East and Africa areas.]	G 58	QMA4742	Volume Angle	G 104	P 3	QPA0701	Cushion-R																																																															
G 21	QBC1473	Button Spring	G 59	QTS1625	Holder Spring	G 60	QMA4614	Holder Spring	G 105	P 4	QPA0702	Cushion-L	G 61	QMA4624	Headphones Angle	G 106	P 5	QPS0434	Pad																																																															
G 22	QYF0697	Cassette Holder	G 62	QMA4679	Side Angle-L	G 63	QMA4679	Eject Spring	G 107	P 6	QPA0712	Spacer	G 64	QMA4679	Headphones Holding Plate	G 108	P 7	QPC0072	Poly Sheet (for AC Power Cord)																																																															
G 23	QBP1925		G 65	QMA4679		G 66	QMA4679		G 109	HAD D DK B BK N NK A	Printed in Japan	G 67	QMA4679		G 110	831207000																																																																		
G 24	QBN1961		G 68	QYF0627		G 69	QMA4679					G 70	XWA3B	Washer 3φ	G 71	XWG3	Washer 3φ	G 72	XSB3+6FZS	Screw $\oplus 3 \times 6$	G 73	XSN2+3	Screw $\oplus 2 \times 3$	G 74	XSN3+8S	Screw $\oplus 3 \times 8$	G 75	XTB3+8BFZ	Tapping Screw $\oplus 3 \times 8$	G 76	XTB3+10BFN	Tapping Screw $\oplus 3 \times 10$	G 77	XTB3+12BFN	Tapping Screw $\oplus 3 \times 12$	G 78	XTN26+5JFZ	Tapping Screw $\oplus 2.6 \times 5$	G 79	XTN26+6B	Tapping Screw $\oplus 2.6 \times 6$	G 80	XTN3+6B		G 81	XTN3+10B		G 82	XTN3+12B		G 83	XTN3+8B		G 84	QTS1636		G 85	QMA4789		G 86	QTD1315		G 87	[D][B][A] QTD1164		G 88	[D][B][A] QTD1322		G 89	[D][B][A] QJB1425		G 90	[D][B][A] QKJ0598		G 91	[D][B][A] XTN3+24B		G 92	[For all European and Australia.]		G 93	[For all European and Australia.]

SERVICE NEWS

Panasonic Service

Deutschland GmbH

An alle Filialen
Kundendienstzentralen
Autorisierten Fachhändler
Serviceberater/Schulung
QC/EK/VK Techn.Klarstellung

Nr.:	Datum:	
318	25. Februar 1985 WK/MM	4/85
THEMA	TEXT	
RS-B 58 R RS-B 78 R Statik-Geräusche	<p>Symptom: Beanstandung von lauten Knackgeräuschen bei Wiedergabe im Abstand von 3 - 10 Minuten oder Knistergeräuschen.</p> <p>Grund: Während z.B. der Heizperiode oder geringer Luftfeuchtigkeit kann es vorkommen, daß laute Knackgeräusche bzw. ein Knistern hörbar wird bei der Wiedergabe. Statische Aufladung bzw. Entladung entstehen beim Bandtransport:</p> <ul style="list-style-type: none"> a) A/W-Kopf b) an der Bandandruckrolle c) Vermittlungsrädchen <p>Abhilfe:</p> <ol style="list-style-type: none"> 1. Lt. Skizze eine Drahtverbindung herstellen. 2. Erneuerung der Bandandruckrolle durch die geänderte Version ET-Nr. pinch roller links QXL1809 pinch roller rechts QXL1808 3. Fetten der Vermittlungsrädchen ET-Nr. QZZ0118 	
Zu Nr. 2 pinch roller links QXL1809 pinch roller rechts QXL1808 Zu Nr. 3 QZZ0118	 <p>(1) Add the Lead wire</p> <p>(2) Replace the pinch roller.</p> <p>(2) Replace the pinch roller</p>	

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Deutschland GmbH